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Briefing Materials - Attraction Concept Charrette for the Cape May-Lewes Ferry Terminals, Delaware - NJ

Harrison Price Company

Briefing Materials

ATTRACTION CONCEPT CHARRETTE FOR THE CAPE MAY-LEWES FERRY TERMINALS
Cape May, New Jersey
Lewes, Delaware

Prepared for

DELAWARE RIVER AND BAY AUTHORITY
July 6, 1994

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INTRODUCTION AND AGENDA

INTRODUCTION

Since July 1964, the Delaware River and Bay Authority (DRBA) has operated a car ferry service linking Cape May, New Jersey, to Lewes, Delaware across the Delaware Bay. Transit time, including loading and unloading, is approximately 100 minutes (1.67 hours) one-way or 200 minutes (3.3 hours) round-trip. Located in a long-established and popular seaside resort area, the Cape May-Lewes Ferry is a combination general transportation and tourist sightseeing excursion service currently handling some 356,000 vehicles and more than 1 million passengers annually with an existing fleet of five vessels. Volume is expected to grow to some 435,000 vehicles and 1.25 million passengers by the end of the decade. Reflecting the substantial number of tourists in the ridership, the ferry operates with a high summertime peak—the months of July and August account for 39 percent of all vehicles carried and 45 percent of all passengers carried.

The operation and facility requirements of the Cape May-Lewes Ferry have changed dramatically since inception of the service. Over the years, DRBA has improved ferry operations in response to changing conditions and growth in traffic, including the commissioning of new vessels designed to operate in the shallow waters of the Delaware Bay and expanding the fleet to accommodate increased demand. Currently, the agency is engaged in a comprehensive master plan to redevelop landside terminal facilities at both ends of the route, with the objective of creating enhanced visitor services and amenities and adding revenue-generating activities that will help to offset ferry operating deficits. Planning and design consultant Wallace Roberts & Todd, in association with S.T. Hudson Engineers, was retained to prepare the master plan, the final report for which was submitted in April 1994.

A preliminary concept plan for the redeveloped terminal facilities was prepared by the design team. This plan calls for a visitor center at each terminal that would include an educational/recreational attraction offering a variety of hands-on interpretive experiences, aquarium exhibits, and other components treating the ecosystems, natural environment, and history of the Delaware Bay. Programming of the two visitor centers would be different but complementary, thereby encouraging visitors to enjoy both attractions to get the full story. It is envisioned that in addition

to ferry passengers and the general public, these visitor centers would also attract school groups from throughout the region; an education outreach program is also contemplated. Water-view restaurants and gift shops would also be added at each terminal.

To assist in fine-tuning the conceptual plan for the two visitor centers, DRBA retained attractions specialist Harrison Price Company (HPC) to undertake a consulting program to determine the optimum nature, scope, and economic parameters of the redevelopment project. A two-step approach was agreed upon: 1) a charrette conference that would refine concept and theming alternatives, specific facility and entertainment content of the two visitor centers, facility sizing guidelines, level of investment, indicated phasing, and other basic considerations; and 2) based on the recommendations of the charrette panel, preparation of an economic feasibility prospectus that will serve as a blueprint for future action and solicitation of development interest.

Charrette participants are as follows:

Charrette Chair

- Harrison A. Price, Chairman, Harrison Price Company

Harrison Price Company Staff

- Sharon J. Dalrymple, Senior Vice President

Independent Attractions Consultant

- Michael Lee, Michael V. Lee Design

Representing Delaware River and Bay Authority

- John Read, Assistant Planner
-

Representing Wallace Roberts & Todd

- David Wallace, Partner

The charrette agenda is presented on the following page, while other sections of this briefing book contain background material for use in the charrette discussions.

CHARRETTE AGENDA

7:00 am INTRODUCTION OF PARTICIPANTS

7:15 am BACKGROUND AND PURPOSE OF THE CHARRETTE

- Summary of redevelopment planning completed to date
- Engagement of HPC to assist in the planning process
- Specific objectives of today's conference

7:45 am DISCUSSION OF SITE CHARACTERISTICS

- Accessibility
- Surrounding land uses
- Zoning and other regulatory considerations
- Weather and seasonality

8:30 am EXAMINATION OF THE MARKET ENVIRONMENT

- Trends and projections for ferry traffic
- Size and demographics of local and regional resident market
- Estimated area tourist volume
- Aggregate market support for visitor center attractions
- Existing inventory of attractions in the region
- Implications of market factors on visitor center program

9:15 am BREAK

9:30 am REVIEW OF PRELIMINARY VISITOR CENTER CONCEPT PLAN

- Economic goals of the project
- Envisioned theme and educational mission
- Interrelationships of the two interpretive venues
- Desired image and visibility in the marketplace
- "Critical mass" requirements
- Identification of potential facility components

10:30 am REFINEMENT OF MIX AND BALANCE OF ACTIVITIES

- Overall theme and related subthemes
- Discussion of specific facility/program alternatives
- Supporting merchandise and food service
- Ancillary amenities

11:30 am LUNCH

12:30 pm CONTINUATION OF CONCEPT REFINEMENT

- Selection of optimum attraction concept for each terminal
- Project phasing, if indicated
- Recommended admission price

1:30 pm PRELIMINARY ATTENDANCE AND SIZING GUIDELINES

- Experience of comparable visitor centers
- Estimated market capture and attendance
- Probable patterns of attendance and capacity requirements
- Demand for food and retail facilities
- Parking implications

2:30 pm BREAK

2:45 pm PRELIMINARY ECONOMIC ANALYSIS

- Estimated per capita and total revenues from on-site visitor spending
- Estimated operating expenses and residual income
- Supportable capital investment and potential sources of funding

3:30 pm SUMMARY OF CHARRETTE PROCEEDINGS

- Recap of findings and recommendations of the charrette panel
- Work program for the subsequent feasibility study
- Description of final report contents
- Acknowledgements

4:00 pm ADJOURNMENT

Section 2

SITE AND AREA INFORMATION

I. INTRODUCTION

A. HISTORY

The history and development of southern New Jersey and the Delmarva Peninsula are linked by the Delaware Bay, which has served as a source of food and a means of transportation from the original inhabitation by the Lenape, the settlement by the Dutch and Swedes, through to the present. The first formal ferry service between Cape May, New Jersey and Lewes, Delaware was operated by a private company and began operation in 1898. The ferry service was spurred by the completion of the Queen Anne's Railroad line between Baltimore and Lewes and provided a valuable link between these communities and Cape May, which had already earned the title of "Queen of the Seaside Resorts." The ferry service was taken over by the Queen Anne's Railroad in 1902, although it was discontinued in 1905, due in part to poor weather conditions during the winter of 1903-1904, during which traffic on the Delaware Bay was blocked for nearly a month, the inability to construct a pier at Cape May, and a 1904 fire in Baltimore which devastated the Queen Anne's Railroad revenues and put the company into receivership.

Although a ferry service to connect the "dead end" Cape May and Delmarva Peninsulas was discussed throughout the early to mid 1900s, political and financial obstacles, combined with the difficulty of locating a protected spot for a ferry landing along the Cape May County bayshore, delayed development of a Cape May-Lewes ferry until the formation of the Delaware River and Bay Authority (DRBA). The DRBA was created by interstate compact legislation approved by the States of Delaware and New Jersey and the Congress of the United States in 1962. The DRBA was established to plan, build, and operate crossings between Delaware and New Jersey, connections to public highways, and transportation and terminal facilities adjacent to the Delaware River or Bay which are required for the sound economic development of the area. The DRBA currently operates the Delaware Memorial Bridge and the Cape May-Lewes Ferry and derives all of its revenues from the operation of these facilities.

The Cape May-Lewes Ferry was formally established in June 1963 and began operation in July 1964. The ferry crosses the 17-mile span of the Delaware Bay between Cape May, New Jersey and Lewes, Delaware and provides an important transportation service for the New Jersey, Delaware, and Maryland shore communities (Figure 1.1). In its first full year of operation (1965), the ferry carried 161,138 vehicles and 533,320 passengers and experienced an operating deficit of $2.1 million. In 1991, the ferry carried 372,572 vehicles and 1,066,126 passengers and experienced an operating deficit of $0.2 million.

B. Regional Location and Context

The Cape May Terminal is located on the western edge of the Cape May Peninsula adjacent to the Delaware Bay and borders on the Cape May Canal (Figure 1.2). Vehicular access to the Terminal is provided by the DRBA approach road/Sandman Boulevard, which connects with Route 9 and the Garden State Parkway. The southern New Jersey region is not densely developed, due in part to extensive areas of wetlands and other environmentally sensitive lands. The Terminal is in close proximity to several popular seaside resorts, including Cape May, Cape May Point, Wildwood, and further to the north, Stone Harbor, Ocean City, and Atlantic City. The economy of the region is strongly tied to the tourism industry, as the year-round population of Cape May, Ocean, and Atlantic Counties of 900,000 swells to over 1.6 million during the summer months.

The Lewes Terminal is located on the Delaware Bay at the northern tip of the Delmarva Peninsula (Figure 1.3). Vehicular access is provided by Cape Henlopen Drive, which connects with Freeman Highway and Route 9. As with the Cape May Terminal, the area surrounding the Lewes Terminal is not densely developed, due to the presence of environmentally sensitive lands, including Cape Henlopen State Park and Prime Hook National Wildlife Refuge. The Terminal is in close proximity to several popular seaside resorts and tourist destinations, including the historic town of Lewes, Cape Henlopen State Park, Rehobeth Beach, and Bethany Beach, and further to the south, Fenwick Island and Ocean City, MD. As with southern New Jersey, the coastal communities of the Delmarva Peninsula are strongly influenced by the tourism industry and seasonal visitation, as the year-round population of Sussex Co., DE and Worcester Co., MD of approximately 170,000 swells to over 500,000 during the summer months.

Figure 1.1
Regional Location
The Ferry provides an important transportation service for southern New Jersey and the Delmarva Peninsula.

THE JERSEY SHORE

In 1609, Dutch explorer Henry Hudson visited what is now Barnegat Inlet and wrote in his log, "This is a very good land to fall in with and a pleasant land to see." Hudson's words still ring true today, for now the New Jersey Shore is one of the most valuable pieces of real estate in the world. It remains a pleasant land to see.

Bordering the Atlantic Ocean on the eastern coast of the state, the Jersey Shore is composed of a nearly continuous chain of barrier-island beaches. Several major bays (Barnegat, Little Egg, Great, Lakes, and Absecon) separate these islands from the mainland.

The Shore encompasses a 127-mile stretch of land, from Sandy Hook in the north to Cape May in the south. More than sixty towns abut the sea; each one has a separate character of its own.

Atlantic City

The "queen" of shore towns is, of course, Atlantic City—about 85 miles south of Sandy Hook and 40 miles north of Cape May. In the early half of this century, this was the great seaside resort of the East Coast, made world-famous by its Boardwalk, saltwater taffy, and Miss America pageant. The town experienced a decline in the 1950s and 1960s. Then, in 1978, gambling casinos opened here, and Atlantic City became more popular than ever. In 1987, nearly 30 million people came here to experience its gambling casinos and world-class entertainment.

Most of the activities are centered around the Boardwalk. The best ones (swimming, people watching, kite flying, jogging) are free. During the summer, there are also many free concerts and craft fairs.

Even if you don't like to gamble, you should at least walk through a casino. You can almost feel the energy—and desperation—of the gamblers, some of whom put thousands of dollars down for one bet. A person must be twenty-one or older to enter a casino, and this is strictly enforced. Casinos are open from 10 A.M. to 4 A.M. on weekdays and stay open until 6 A.M. on weekends.

Fishing, boating, sailing, wind surfing, swimming, and water skiing can all be done right outside the big casino-hotels. Many of the casino-hotels also have their own tennis courts. Many public tennis courts, as well as public golf courses, are within five minutes of the casinos.

The nightlife is outstanding. Besides presenting the most famous names in show business, all the casino-hotels have lounges, piano bars, and cabarets. Several nightclubs in town stay open until 6 A.M. to accommodate the thousands of casino employees who work late shifts.

More Shore Towns

Other Shore towns, of course, have personalities far different from Atlantic City.

Ocean Grove, for example, originally founded as a Methodist retreat, is ultraconservative and probably has the most restrictive blue laws on the Shore. Liquor is banned, and until recently, you couldn't even drive your car in town on Sundays!

Deal is the summer retreat of millionaires. It features huge mansions, many of which encompass several acres of beachfront property.

Although somewhat rundown these days, Asbury Park is still a lively, throbbing, pulsating town filled with young people who congregate around its boardwalk. Here, one can find amusement arcades, rides, and concessions. This town is also famed as one of the first hangouts of rock superstar Bruce Springsteen, who played at the Stone Pony early in his career, and still makes surprise appearances at this club.

Spring Lake is quiet, stately, and clean; it's filled with neat white Victorian houses. The boardwalk is nice (with very few concession stands) and there's a very pleasant beach.

Manasquan is a yuppie singles town—very crowded.

Point Pleasant has a sort of honkytonk feel to it. Several amusement parks dot its boardwalk, which teems with teenagers.

Long Beach Island is an 12-mile-long strip of several small seaside communities. It's not as crowded as many other areas, probably because there isn't a boardwalk or an amusement pier. It's comprised of a lot of summer houses rented to New Yorkers and Philadelphians, as well as many motels.

Ocean City is ideal for families; it's very clean, with a lot of fun activities on the boardwalk there. No liquor is sold.

Stone Harbor is filled with scores of harbors and lagoons, and as a result, it has become the yachting and sailing center of the southern Shore. A small bird sanctuary attracts birdwatchers.

The Wildwoods (consisting of North Wildwood, West Wildwood, Wildwood, and Wildwood Crest) is a mecca for French-Canadians and for teenagers. During the summer, thousands of young people "cruise the planks" looking for action.

Last, but certainly not least, is one of the most charming towns on the entire East Coast: Cape May. This pleasant, tree-lined village is a haven for enthusiasts of Victorian architecture. In fact, it is one of the few cities in the United States to be designated a national historic landmark. It has an excellent beach and many charming bed-and-breakfast inns.

History

For the first several centuries the only humans who lived on the Jersey Shore were the Lenni Lenape (Delaware) Indians, who thrived here because of the land's rich variety of shellfish, waterfowl, and game. In the early 1600s, the Dutch settlers were the first whites to set up posts here. In 1664, England wrestled control of the land from the Dutch and gave the area its present name, New Jersey. (It was named after nobleman George Carteret, who successfully defended the Isle of Jersey from invaders; he in turn received part of the new colony for his heroic action.)

In the late 1600s and early 1700s, the whaling industry flourished here, especially on Long Beach Island. During the Revolutionary War, the northern section of the shore (particularly the Tuckerton area) was a center for privateers, who often attacked British trading vessels. Pirates would use lanterns to lure ships onto dangerous shoals. The ships would run aground, break up, and spill their cargoes for pirates to seize. Captain Kidd and his band roamed here, escaping the British time after time in the maze of bays and coves. In fact, some people believe Captain Kidd's famous treasure is still entombed somewhere along Long Beach Island. A few gold coins have washed ashore over the years to support the myth.

Though the development of railroad lines had a profound effect on the Shore in the mid-nineteenth century, when the automobile became a fixture in each American family in the early 1900s, the Shore area exploded in growth. It became perhaps the most popular vacation spot in America. Families bought second homes and then passed them on from generation to generation—a tradition that is very much alive today.

After World War II, the Jet Age expanded the horizons of travel for many visitors. As a result, many areas, including Atlantic City, suffered from a drop in tourism. But the introduction of gambling in the late 1970s brought a second surge of interest to the Shore, and it is booming once again.

The Unique Shore

Several things make the New Jersey Shore distinct from other seashore areas. Its wide, smooth, sandy, rock-free beaches are among the best anywhere. The ocean waters are fairly calm, and in summer they often warm up to over 70 degrees Fahrenheit. The gentle slope of the sea bottom and the gentle waves make it an ideal spot for people who like to wade.

Gambling also makes the Shore special, since the next-nearest U.S. gambling area (Nevada) is 2,500 miles away. No matter where you are staying on the Shore, you are less than a 1½-hour drive from Atlantic City (in most cases, it's less than 45 minutes).

Many of the seaside communities have a boardwalk—a uniquely New Jersey feature. Atlantic City built the first boardwalk in 1870; other towns eventually followed suit. Today, much of the action in Shore communities is centered around their boardwalks. These wooden structures are a conglomeration of fast-food places, ice-cream parlors, souvenir stands, amusement parks, saltwater-taffy stands, and video arcades. They are filled with roller skaters, bikers, joggers, cyclists (in early mornings), mothers with strollers, and hand-holding lovers young and old. In many towns, free concerts are performed on boardwalks in the evenings.

Of course, the Atlantic Ocean has other attractions too. Sports enthusiasts love it because it is one of the best spots for saltwater fishing; more than thirty species are caught. Divers love it because there are literally thousands of shipwrecks, some still filled with treasure, just offshore. Many diving operators lead excursions to these sites. There are also many marinas, where one can launch a boat or rent one. In fact, in June, 1988, developer Donald Trump completed a $17-million renovation of Farley State Marina, to accommodate guests staying at his Trump's Castle Casino-Hotel. Jet skis, wind surfers, and sailboats can also be rented. Evening cocktail cruises are offered from a few boat basins.

Bicycles can be rented at many shore locations; an early-morning ride along a boardwalk is particularly invigorating. (In some towns, bike riding on boardwalks is allowed only in early mornings.) Golf and tennis facilities are usually fairly near the beach.

More than Sand and Sun

Those who want to get away from the sand and sun for a few hours can enjoy a wide variety of other attractions in the Shore region. History buffs will enjoy strolling through several fascinating sites. Victorian Wheaton Village is a 68-acre complex housing the Museum of American Glass and a working glass factory. The Ocean County Historical Museum in Toms River features nine rooms furnished in 1820- to 1890-era decor. The historic Village of Allaire has been restored to duplicate a community that made iron before the turn of the century. Historic Gardner's Basin is an early-1900s fishing village, with an aquarium museum and a tall ship that can be toured. The historic Towne of Smithville is an authentic 1800s village with restored colonial buildings.

Many top-notch museums and art galleries capture the flavor of the Shore's rich culture. Most are within a 30-minute drive of the ocean. The Cape May Court House Historical Museum presents a fine collection of local Native American artifacts, decoys, whaling implements, glass and china, costumes, and genealogical material. The Ocean City Historical Museum has rooms of antique furniture, and mannequins wearing turn-of-the-century clothes. Somers Mansion, the oldest house (1725) in Atlantic County, features exhibits that show original furnishings from 260 years ago.

Of course, not all the shore is built up. Many areas still retain the natural beauty originally appreciated by Henry Hudson nearly 400 years ago. The Gateway National Recreation Area in Sandy Hook has dunes, a holly forest, many Revolutionary War historical sites, and the old lighthouse. Island Beach State Park, just north of Long Beach Island, is a 10-mile stretch of beach that is seldom crowded, since just a limited number of cars a day are allowed in. Holgate, a state park at the southern end of Long Beach Island, is popular with surfers. It's one of the few spots along the coast that has some rough waves. The Edwin B. Forsythe (formerly called Brigantine) National Wildlife Refuge has 20,000 acres of marshland for birdwatching and nature photography. The Stone Harbor Bird Sanctuary in Stone Harbor has lots of herons, which can be seen at dawn and dusk. At Higbee Beach near Cape May, one can watch the sun set over Delaware Bay. This is one of the few beaches where fires are allowed.

Nightlife

The Shore is a lively place at night, especially in the summer. The epicenter of the action, of course, is Atlantic City. All 12 major casino-hotels have major showrooms, and they compete fiercely for the hottest names in show business. Bill Cosby, Frank Sinatra, Eddie Murphy, Liza Minelli, Jackie Mason, Don Rickles, and Sammy Davis, Jr. all appear regularly. In addition, each casino-hotel has at least one other lounge or cabaret with a piano bar or other form of entertainment.

Most of the local towns have a pretty good selection of night spots, ranging from informal pubs to fancy, dress-to-kill discos. There's lots of live music, and many local bands consider themselves in the vanguard of the Jersey Shore music sound. Many local towns sponsor concerts along the beach in summer evenings.

THE DELAWARE SHORE

The stretch of shore from Lewes, Delaware, south to Fenwick Island (at the Maryland border) is among the most beautiful seafront land in the East.

This area is accessible via the Cape May, New Jersey, ferry—a pleasant 70-minute boat ride across Delaware Bay.

The major tourist areas, from north to south, are Lewes, Rehoboth Beach, Dewey Beach, Bethany Beach, and Fenwick Island.

Rehoboth Beach is Delaware's largest seaside summer resort. Originally a Methodist retreat, it is now a favorite playground of residents up and down the Eastern Seaboard. It's especially ideal for families, with a boardwalk, lots of daytime and nighttime activities, recreational opportunities, and great restaurants. The bandstand in the center of town has concerts on weekend evenings, and the convention hall has events scheduled throughout the summer.

About a mile south of Rehoboth Beach is Dewey Beach—located on a nice, sheltered bay. It's much smaller but just as nice. It's only two blocks wide, so outdoor enthusiasts have a choice of sailboarding, water skiing, swimming, or fishing in either Rehoboth Bay or the Atlantic Ocean. Most swimmers, of course, choose to stay in the Atlantic.

The 10-mile stretch from Dewey Beach to Bethany Beach is composed mostly of Delaware Seashore State Park. Its fine public beaches are ideal for swimming, surfing, and fishing, as well as crabbing and clamming.

Bethany Beach and Fenwick Island are called the Quiet Resorts. As far as Bethany is concerned, this is somewhat of a misnomer, since its boardwalk teems with action both day and night. The Bethany Beach Recreation Program provides daily summertime activities such as basketball and volleyball. Children's movies are shown in the evening twice a week. The Bethany Beach Bandstand features musical programs and other entertainment on weekends. Headquarters for this program are at Garfield Parkway and Pennsylvania Avenue, at the Christian Church Conference Grounds (539-8011).

Fenwick Island, founded in 1677, has four miles of oceanfront and is laced with canals leading into Little Assawoman Bay.

MARYLAND'S ATLANTIC COAST

Ocean City, Maryland's Atlantic Ocean resort, is sun, sand, surf, and sky—a salt-air mecca of sun-washed days and soft summer nights, soaring gulls and sauntering bikinis, sandcastles, beach cottages, highrise hotels and condominiums. Inland from Ocean City (and Assateague Island to the south), Worcester County is a haven of rural tranquility. Here, along deep rivers with strange Indian names, lie villages, hamlets, and towns that have changed little over the last century. Berlin, Snow Hill, Pocomoke City, and Whitehaven have all maintained their Victorian elegance.

Built along a barrier island that is often only two blocks wide, Ocean City stretches south from the Delaware state line for more than 156 city blocks. Blessed with almost 10 miles of sandy ocean beach, the city looks eastward toward the Atlantic and westward toward the mainland over a series of picturesque and protected bays—Montego, Big Assawoman, Isle of Wight, and Sinepuxent. The bays and the city's commercial boat harbor are open to the ocean through the Inlet between Ocean City and Assateague Island to the south.

Assateague Island

Assateague Island, like Ocean City, is a barrier strip of seashore and a major touring destination—but the similarity between the two stops there. Each has more than a fair share of sun, sand, and surf, but if Ocean City is the epicenter of activities and boardwalk fun, Assateague is the lovely and natural home of the Assateague pony, the tern, and the gull.

North Assateague is the Maryland section of the island. The National Park Service has a headquarters and maintains a Visitor's Center (on your right) shortly before you cross the bridge over Sinepuxent Bay to Assateague. North Assateague is divided into three parts: six sandy miles of "wild" beach, accessible only on foot, on your left as you drive onto the island; Assateague State Park in the mid-section; and, to the south, Assateague Island National Seashore, another natural expanse of surf and sandy dunes. There is a State Park Information Center (with campground registration) on your left near the park end of Sinepuxent Bay Bridge.

And now, a word about those free spirits of the seashore—Assateague's famous wild ponies: They may look gentle, and usually they are, but they're also unpredictable—they kick and sometimes they bite, especially if you've been feeding them and then stop. It's really hard to blame them, considering the fact that their forebearers swam ashore from a foundering Spanish galleon in the 16th century and they've been munching on marsh grass and bayberry leaves ever since.

There are two herds of Assateague ponies on the island, a larger group in the Virginia section to the south, and a smaller herd in Maryland. Virginia's Chincoteague Volunteer Fire Department owns the southern ponies and manages an annual July roundup and auction; the National Park Service manages Maryland's Assateague's wild pony herd.

Cape May (F-3)

Settled: 1631 **Pop:** 4,668 **Elev:** 14 ft **Area code:** 609 **Zip:** 08204

Cape May, the nation's oldest seashore resort, is located on the southernmost tip of the state surrounded by the Atlantic Ocean and Delaware Bay. Popular with Philadelphia and New York society since 1766, Cape May has been host to Presidents Lincoln, Grant, Pierce, Buchanan and Harrison, as well as notables such as John Wanamaker and Horace Greeley. The entire town has been proclaimed a National Historic Landmark because it has more than 600 Victorian homes and buildings, many of which have been restored. The downtown Washington Street Victorian Mall features three blocks of shops and restaurants. Four miles of beaches and a one-and-one-quarter mile paved promenade offer vacationers varied entertainment. "Cape May diamonds," often found on the shores of Delaware Bay by visitors, are actually pure quartz, rounded by the waves.

What to See and Do

1. **Emlen Physick Estate** (1879). 1048 Washington St. Authentically restored 18-room Victorian mansion designed by Frank Furness. Mansion is also headquarters for the Mid-Atlantic Center for the Arts. (Apr–Nov, daily exc Fri; rest of yr, Tues–Thur & Sat–Sun) Phone 884-5404. ¢¢

2. **Historic Cold Spring Village.** 3 mi N via US 109. Restored 1850 South Jersey farm village. Craft shops; spinning, blacksmithing, weaving, pottery, broom making, decoy carving demonstrations; folk art; bakery and food shops; restaurant. (June–Sept, daily) Phone 898-2300. ¢¢

3. **Tours.** The Mid-Atlantic Center for the Arts offers the following tours. For further information contact PO Box 340; 884-5404.

   Trolleys. Half-hour tours on enclosed trolley bus or open-air carriage; three routes beginning at Ocean St opp the Washington St Mall. (June–Oct, daily; reduced schedule rest of yr; no tours Thanksgiving) ¢¢

   Mansions by Gaslight. Three-hour tour begins at Emlen Physick Estate (see #1). Visits four Victorian landmarks: Emlen Physick House (1879), the Abbey (1869), Mainstay Inn (1872) and Humphrey Hughes House (1903); shuttle bus between houses. (Mid-June–Sept, Wed evenings; rest of yr, hol and special tours) ¢¢¢¢

   Cape May Innteriors. Features a different group of houses each week, visiting five or more bed & breakfast inns and guesthouses. Innkeepers greet guests and describe experiences. (Summer, Mon; rest of yr, Sat; no tours Dec–Jan) ¢¢¢

   Walking Tours of the Historic District. Begin at Information Booth on Washington St Mall at Ocean St. Three 1½-hour guided tours give historical insight into the customs and traditions of the Victoriana and their ornate architecture. (June–Sept, daily; reduced schedule rest of yr) ¢¢

   Ocean Walk Tours. Begins at 2nd Ave at Beach Dr. A 1½-hr guided tour of Cape May's beaches. Guide discusses marine life and history of the beaches, including legends of buried treasure. (May–Sept, Tues–Sat) ¢¢

   Stained Glass Walking Tour. Begins at Information Booth on Washington St Mall at Ocean St. Guided evening tour showing examples of Victorian and new stained glass. (June–Oct, Tues evenings) ¢¢

   Combination Tours. Begin at Emlen Physick Estate (see #1). Approx two hours; includes trolley tour and guided tour of Physick House. (June–Oct, daily; rest of yr, Sat & Sun) Phone for schedule. ¢¢¢

4. **Swimming, fishing, boating.** Beaches with lifeguards (fee). Fishing is very good at the confluence of the Atlantic and Delaware Bay. A large harbor holds boats of all sizes; excellent for sailboating and other small boat activity.

5. **Cape May–Lewes (DE) Ferry.** Sole connection between southern terminus of Garden State Pkwy and US 13 (Ocean Hwy) on the Delmarva Peninsula. 16-mi, 70-min trip across Delaware Bay. (Daily) For schedule phone 886-2718 (Cape May Terminal) or 302/645-6313 (Lewes Terminal). Per person ¢¢; Per vehicle ¢¢¢¢¢

(For further information contact the Chamber of Commerce, PO Box 556, phone 884-5508; or the Welcome Center at 405 Lafayette St, phone 884-9562.)

Annual Events

Promenade Art Exhibit. July.

Victorian Week. Tours, antiques, crafts, period fashion shows. Mid-Oct.

Lewes (C-6)

Settled: 1631 **Pop:** 2,295 **Elev:** 10 ft **Area code:** 302 **Zip:** 19958

Lewes (LOO-is) has been home base to Delaware Bay pilots for 300 years. Weather-beaten, cypress-shingled houses still line the streets where privateers plundered and Captain Kidd bargained away his loot. The treacherous sandbars outside the harbor have claimed their share of ships, and stories of sunken treasure have circulated for centuries. Some buildings show the trace of cannonballs that hit their mark when the British bombarded Lewes in the War of 1812. Traces of the original stockade were discovered in 1964.

What to See and Do

1. **Zwaanendael Museum.** Savannah Rd & Kings Hwy. Adaptation of Hoorn, Holland Town Hall was built in 1931 as memorial to original Dutch founders of Lewes (1631). Highlights the town's maritime heritage with colonial, Native American and Dutch exhibits. (Daily exc Mon; closed hols) Phone 645-9418. **Free.**

2. **Restored buildings.** Maintained by the Lewes Historical Society. Cannon Ball House and US Lifesaving Station have marine exhibits and lightship *Overfalls*. Other buildings open are Thompson country store, Plank house, Rabbit's Ferry house, Burton-Ingram house, Ellegood house, Hiram R. Burton house and old doctor's office. (Mid-July–Labor Day, Tues–Sat) Tickets at Thompson Country Store. Guided walking tours (July–mid-Sept, Tues, Thurs & Fri). Varied events take place during summer season. Phone 645-7670. Tour ¢¢

3. **Cape Henlopen State Park.** 1 mi E on Cape Henlopen Dr. More than 3,000 acres at confluence of Delaware Bay and Atlantic Ocean; site of decommissioned Fort Miles, part of coastal defense system during World War II. Supervised swimming; fishing. Nature center, programs and trails. Picnicking, concession. Camping (water hookups, dump station). Standard hrs, fees. Phone 645-8983.

4. **Lewes–Cape May, NJ Ferry.** Sole connection between US 13 (Ocean Hwy) on the Delmarva Peninsula and southern terminus of Garden State Pkwy (NJ). Trip across Delaware Bay (16 mi) takes 70 minutes. (Daily; 22 crossings in summer, 8 in winter, 12 in spring & fall) Phone 645-6313. Per person, one way ¢¢

(For further information contact the Lewes Chamber of Commerce, Fisher-Martin House, Kings Hwy, PO Box 1; 645-8073.)

Annual Events

Great Delaware Kite Festival. Cape Henlopen State Park (see #3). Festival heralding the beginning of spring. Fri before Easter.

Coast Day. University of Delaware Marine Studies Complex. Facilities and research vessel open to public; marine exhibits, research demonstrations, nautical films. 1st Sun Oct.

WEATHER CONDITIONS IN THE CAPE MAY-LEWES AREA 1/
(30-Year Normal Values)

Month	Temperature (°F)		Average Precipitation (inches)	
	Average Maximum	Average Minimum	Rain	Snow
January	24	41	3.56	4. 8
February	25	43	3.37	5. 0
March	32	51	4.31	3. 2
April	41	62	3.37	0. 3
May	51	72	3.54	. . .
June	60	81	3.38	. . .
July	65	85	4.36	. . .
August	64	83	4.90	. . .
September	57	77	3.99	. . .
October	46	68	3.45	T
November	36	56	4.21	0. 4
December	26	44	4.01	2. 4
Annual	44	64	46.45	16. 1

T means trace.

1/ Based on data for Atlantic City (the nearest reporting station).

Source: National Oceanic and Atmospheric Administration.

Section 3

FERRY TRAFFIC VOLUME

III. CURRENT AND FUTURE RIDERSHIP

A. VEHICLE AND PASSENGER RIDERSHIP TRENDS

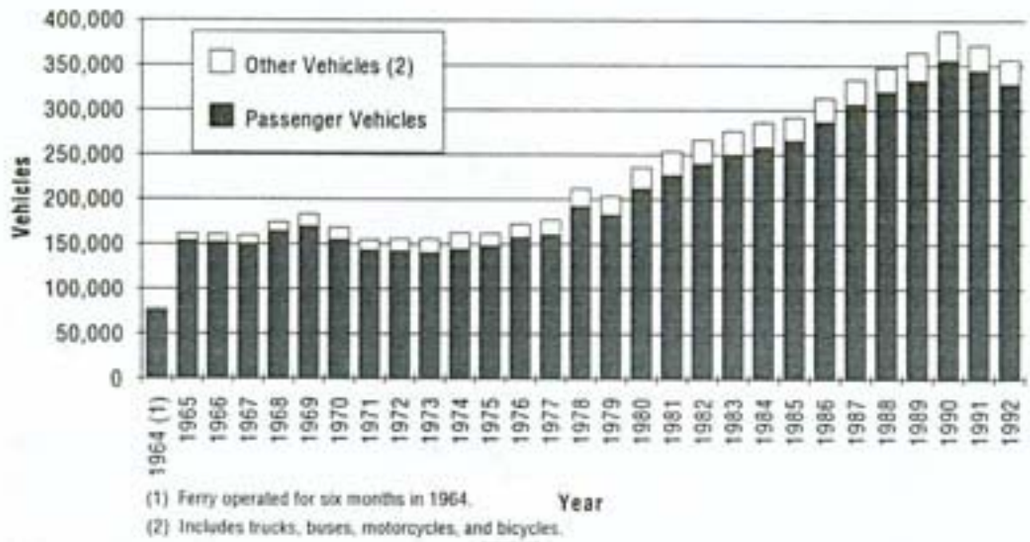
Annual Vehicle Ridership Trends

Since the ferry's first full year of operation, annual revenue traffic has increased from 161,138 in 1965 to 356,328 in 1992 (Table 3.1 and Figure 3.1). This represents an increase of 121 percent over this 28 year period, for an average annual increase of 4.3 percent.

Ferry service began in July 1964 using four ferries purchased from the Virginia Ferry Corporation. At that time, the ferry operated 24 hours a day and carried approximately 160,000 revenue vehicles each year. Due to the extended operating schedule, dredging requirements, and lower than projected ridership, operating expenses exceeded revenues. The ferry experienced operating deficits of $2.1 million and $1.5 million in 1965 and 1966, respectively. By 1969, although revenue traffic had increased to 183,171, a $1.5 million operating deficit was recorded.

In order to reduce operating expenses, the 24-hour operation and seven day on seven day off crew schedule were eliminated in 1970 in favor of a 16-hour operating schedule with crews based out of Cape May. Ridership decreased to 168,087 and 154,868 in 1970 and 1971, respectively, in response to the reduced schedule and increased toll rates in 1971. The DRBA reduced dredging requirements and expenses by placing three shallow-draft vessels into operation in 1974 and 1975 and selling the original ferries. Although revenue traffic did not substantially increase between 1971 and 1975, the ferry recorded an operating surplus of $82,752 in 1975.

Figure 3.1
Annual Revenue Traffic



(1) Ferry operated for six months in 1964.
(2) Includes trucks, buses, motorcycles, and bicycles.

Table 3.1
Annual Revenue Vehicles and Passengers

	Vehicles				Passengers		
Year	Passenger Vehicles	Other Vehicles (2)	Total	% Annual Change	Total	% Annual Change	Passenger Vehicle Toll
1964 (1)	74,389	3,061	77,450	n/a	285,248	n/a	
1965	153,304	7,834	161,138	108.1%	533,320	87.0%	$3.25
1966	151,319	9,272	160,591	-0.3%	506,142	-5.1%	*
1967	149,211	10,174	159,385	-0.8%	490,844	-3.0%	*
1968	163,597	10,587	174,184	9.3%	553,409	12.7%	*
1969	169,169	14,002	183,171	5.2%	609,356	10.1%	*
1970	154,184	13,903	168,087	-8.2%	551,764	-9.5%	*
1971	142,302	12,327	154,629	-8.0%	500,935	-9.2%	$4.50
1972	141,308	14,560	155,868	0.8%	494,268	-1.3%	*
1973	139,579	16,065	155,644	-0.1%	476,409	-3.6%	$5.00
1974	143,652	18,511	162,163	4.2%	504,655	5.9%	*
1975	147,329	14,368	161,697	-0.3%	509,824	1.0%	$8.00
1976	156,725	15,439	172,164	6.5%	533,187	4.6%	*
1977	159,734	17,420	177,154	2.9%	572,120	7.3%	*
1978	191,227	20,797	212,024	19.7%	630,813	10.3%	*
1979	182,123	21,422	203,545	-4.0%	591,257	-6.3%	*
1980	211,546	24,434	235,980	15.9%	697,909	18.0%	$9.25
1981	226,638	27,284	253,922	7.6%	764,663	9.6%	$11.00
1982	239,366	27,175	266,541	5.0%	811,857	6.2%	*
1983	249,812	27,014	276,826	3.9%	848,001	4.5%	$12.50
1984	258,337	27,721	286,058	3.3%	864,616	2.0%	*
1985	265,627	26,083	291,710	2.0%	905,611	4.7%	$14.00
1986	286,577	26,771	313,348	7.4%	966,716	6.7%	*
1987	306,019	27,767	333,786	6.5%	1,017,282	5.2%	*
1988	319,900	27,341	347,241	4.0%	1,045,324	2.8%	$16.00
1989	332,336	32,122	364,458	5.0%	1,062,577	1.7%	*
1990	355,459	32,774	388,233	6.5%	1,121,423	5.5%	*
1991	343,425	29,147	372,572	-4.0%	1,066,126	-4.9%	$18.00
1992	328,328	28,139	356,467	-4.3%	1,017,359	-4.6%	*

(1) Ferry operated for six months in 1964.
(2) Includes trucks, buses, motercycles, and bicycles.

Note: The Delaware River and Bay Authority is the source for all Ferry vehicle and passenger ridership information.

Since 1975, the ferry has experienced relatively steady increases in annual revenue traffic. Traffic increased to 212,024 in 1978 in response to the opening of casinos in Atlantic City. Between 1975 and 1990, annual revenue traffic has increased 140 percent, from 161,687 to 388,233. This increase in annual revenue traffic represents an average annual rate of increase of 9.3 percent over this fifteen year period. Two additional ferry vessels were placed into service in 1981 and 1985 to provide capacity for this increased demand.

Between 1990 and 1992, revenue traffic has declined 8.3 percent from 388,233 to 356,467. This reduced traffic likely reflects the national economic downturn and reduced tourism activity over this period, although peak season ferry capacity and the 1991 toll increase may also be contributing factors. Revenue vehicle and passenger ridership for the first seven months of 1993 have increased 5.6 percent and 6.9 percent, respectively, over the seven-month totals for 1992.

Annual Passenger Ridership and Passenger/Vehicle Ratio Trends

Ferry passenger ridership has increased from 533,320 in 1965 to 1,017,359 in 1992 (Table 3.1). This represents an increase of 91 percent over this 28-year period, for an average annual increase of 3.3 percent. Since passenger ridership has increased at a slower rate than vehicle ridership, the passenger/vehicle ratio has declined over this 28-year period, from a high of 3.31 passengers per vehicle in 1965 to 2.85 in 1992. This trend is likely due to decreasing household sizes in the general population due to lower birth rates and an aging population.

Monthly/Seasonal Vehicle and Passenger Ridership Trends

Ferry vehicle and passenger ridership is largely influenced by tourist and vacation-related travel and the popularity of the New Jersey, Delaware, and Maryland shore communities during the summer months. As indicated in Table 3.2, the bulk of the ferry traffic and ridership between 1965 and 1990 has consistently occurred in the summer months of June, July and August. In 1990, revenue vehicles during these three months totalled 193,042, representing 49.7 percent of the annual revenue traffic. Revenue passengers exhibit similar peak season characteristics. In 1990, revenue passengers totalled 622,152 during the summer months, representing 55.5 percent of the annual revenue passengers.

Although summer vehicle and passenger ridership represents approximately 50 percent of the annual totals, vehicle and passenger ridership for the peak season months of July and August have been increasing at a slower rate than the overall ferry ridership. As shown in Table 3.2, annual revenue vehicles have increased 140.9 percent between 1965 and 1990. During this period, however, revenue vehicles during the months of July and August have increased only 117.7 and 101.4 percent, respectively. Meanwhile, traffic and ridership during the months of January, April, May, June, September, October, and November have been increasing at rates well above the annual rate. Passenger ridership by month exhibits similar trends (Table 3.2).

These vehicle and passenger ridership trends indicate that while the ferry ridership continues to exhibit a substantial summer peak due to tourism and vacation-related travel, ferry ridership during the off-peak months has been increasing at a faster rate than the peak season ridership. This is likely due to the increased year-round population and employment in the primary market area (see Primary and Secondary Market Areas below) as well as increased tourism in the spring and fall months. This trend has enabled the DRBA to make more efficient use of its fixed capital stock of ferries during the off-peak months.

Table 3.2

Monthly Revenue Vehicle and Passenger Trends (1965-1990)

Vehicles							Percent Change by 5 Year Increments					Percent Change
	1965	1970	1975	1980	1985	1990	65 - 70	70 - 75	75 - 80	80 - 85	85 - 90	65 - 90
January	3,502	1,893	4,531	5,547	5,092	10,109	-45.9%	139.4%	22.4%	-8.2%	98.5%	188.7%
February	4,441	2,980	4,210	5,677	6,488	11,245	-32.9%	41.3%	34.8%	14.3%	73.3%	153.2%
March	5,824	6,496	6,573	7,020	10,547	14,650	11.5%	1.2%	6.8%	50.2%	38.9%	151.5%
April	8,869	7,986	7,967	13,162	17,874	25,788	-10.0%	-0.2%	65.2%	35.8%	44.3%	190.8%
May	10,875	12,845	12,178	17,887	24,679	30,852	18.1%	-5.2%	46.9%	38.0%	25.0%	183.7%
June	16,015	20,597	19,338	26,784	34,343	44,201	28.6%	-6.1%	38.5%	28.2%	28.7%	176.0%
July	32,733	35,499	32,431	46,804	55,207	71,274	8.5%	-8.6%	44.3%	18.0%	29.1%	117.7%
August	38,516	40,290	37,849	54,385	63,247	77,567	4.6%	-6.1%	43.7%	16.3%	22.6%	101.4%
September	18,513	19,771	15,064	27,431	32,708	46,683	6.8%	-23.8%	82.1%	19.2%	42.7%	152.2%
October	9,844	9,046	10,007	16,042	22,142	27,856	-8.1%	10.6%	60.3%	38.0%	25.8%	183.0%
November	6,600	6,317	6,938	8,994	11,268	17,493	-4.3%	9.8%	29.6%	25.3%	55.2%	165.0%
December	5,406	4,367	4,611	6,247	8,115	10,515	-19.2%	5.6%	35.5%	29.9%	29.6%	94.5%
Total	**161,138**	**168,087**	**161,697**	**235,980**	**291,710**	**388,233**	**4.3%**	**-3.8%**	**45.9%**	**23.6%**	**33.1%**	**140.9%**

Passengers							Percent Change by 5 Year Increments					Percent
	1965	1970	1975	1980	1985	1990	65 - 70	70 - 75	75 - 80	80 - 85	85 - 90	65 - 90
January	8,658	5,107	10,308	12,185	11,291	22,879	-41.0%	101.8%	18.2%	-7.3%	102.6%	164.3%
February	11,580	7,553	10,112	12,522	15,828	27,104	-34.8%	33.9%	23.8%	26.4%	71.2%	134.1%
March	14,221	16,642	16,570	16,162	25,973	34,190	17.0%	-0.4%	-2.5%	60.7%	31.6%	140.4%
April	23,819	20,299	20,269	33,628	47,468	68,818	-14.8%	-0.1%	65.9%	41.2%	45.0%	188.9%
May	30,388	33,585	31,710	45,385	65,365	79,081	10.5%	-5.6%	43.1%	44.0%	21.0%	160.2%
June	51,936	64,898	60,733	79,364	106,996	128,755	25.0%	-6.4%	30.7%	34.8%	20.3%	147.9%
July	125,295	137,449	121,500	160,452	198,106	234,015	9.7%	-11.6%	32.1%	23.5%	18.1%	86.8%
August	151,261	157,487	143,108	186,959	227,451	259,382	4.1%	-9.1%	30.6%	21.7%	14.0%	71.5%
September	60,151	61,379	42,435	76,975	100,035	129,401	2.0%	-30.9%	81.4%	30.0%	29.4%	115.1%
October	26,282	22,578	25,019	39,229	58,637	70,193	-14.1%	10.8%	56.8%	49.5%	19.7%	167.1%
November	16,717	15,143	17,439	21,262	29,433	43,053	-9.4%	15.2%	21.9%	38.4%	46.3%	157.5%
December	13,012	9,644	10,621	13,785	19,028	24,552	-25.9%	10.1%	29.8%	38.0%	29.0%	88.7%
Total	**533,320**	**551,764**	**509,824**	**697,908**	**905,611**	**1,121,423**	**3.5%**	**-7.6%**	**36.9%**	**29.8%**	**23.8%**	**110.3%**

B. Vehicle and Passenger Ridership Characteristics

1992 Monthly Revenue Vehicle and Passenger Ridership

Detailed vehicle and passenger ridership information has been collected and analyzed for 1992, including vehicles and passengers by month, direction, and type.

Vehicle and Passenger Ridership by Month

As described above, the ferry traffic and passenger ridership exhibits a strong seasonal variation, with traffic and ridership during the months of July and August substantially higher than during the remaining months of the year (Table 3.3 and Figure 3.2). The number of vehicles (140,134) and passengers (457,796) carried during these two months accounted for 39.3 percent and 45.0 percent, respectively, of the 1992 annual totals.

Table 3.3
1992 Revenue Vehicles and Passengers

Month	Vehicles		Passengers	
	Total	Percent	Total	Percent
January	8,245	2.3%	19,135	1.9%
February	9,953	2.8%	24,089	2.4%
March	12,579	3.5%	29,294	2.9%
April	22,980	6.4%	59,763	5.9%
May	30,392	8.5%	76,486	7.5%
June	37,568	10.5%	107,796	10.6%
July	66,432	18.6%	214,385	21.1%
August	73,702	20.7%	243,411	23.9%
September	41,886	11.8%	115,498	11.4%
October	27,165	7.6%	67,377	6.6%
November	15,851	4.4%	37,746	3.7%
December	9,714	2.7%	22,379	2.2%
Total	**356,467**	**100.0%**	**1,017,359**	**100.0%**

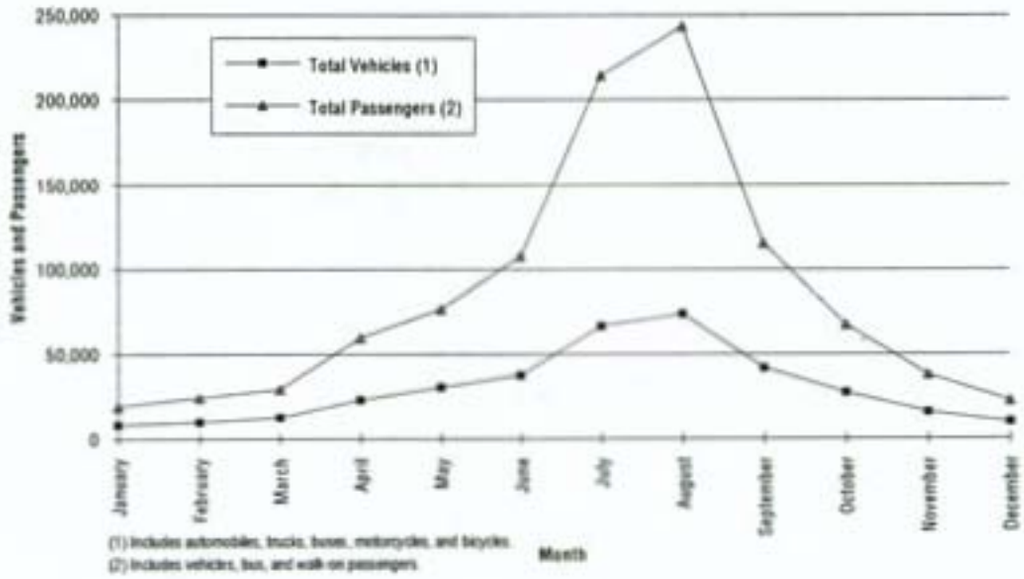


Figure 3.2
1992 Revenue Vehicles and Passengers

Vehicle and Passenger Ridership by Direction

A total of 356,467 revenue vehicles and 1,036,311 passengers were carried during 1992. As indicated in Table 3.4 and Figure 3.3, the vehicle and passenger ridership by direction is generally evenly split, with northbound (Lewes to Cape May) totals slightly higher than southbound (Cape May to Lewes) totals. Of the total vehicle trips, 182,392, or 51.2 percent, were northbound, while 174,075, or 48.8 percent, were southbound. The directional distribution of vehicles by month indicates a slight seasonal variation, as the number of southbound vehicles (31,343, or 51.4 percent) exceeded the number of northbound vehicles (29,632, or 48.6 percent) during the months of January, October, November, and December. During the remaining months of the year, the number of northbound vehicles (152,760, or 51.7 percent) exceeded the number of southbound vehicles (142,732, or 48.3 percent).

The 1992 total passenger trips exhibit the similar directional and seasonal patterns. 528,119, or 51.0 percent, of the total passenger trips were northbound, while 508,192, or 49.0 percent, were southbound. The number of southbound passengers (76,085) exceeded the number of northbound passengers (72,583) only during the months of January, October, November, and December. During the remaining months of the year, the number of northbound passengers (455,536) exceeded the number of southbound passengers (432,107).

The vehicle and passenger ridership information indicates that ferry ridership is generally evenly split between northbound and southbound throughout the year. The seasonal variations in ridership by direction are only modest, as the number of northbound and southbound vehicles are within four percent throughout the year. This even distribution of vehicle and passenger ridership indicates that it is not necessary for the ferry to "deadhead" in one direction at any time of the year in order to carry large volumes of vehicles and passengers in the opposite direction.

Figure 3.3
1992 Revenue Vehicles by Direction

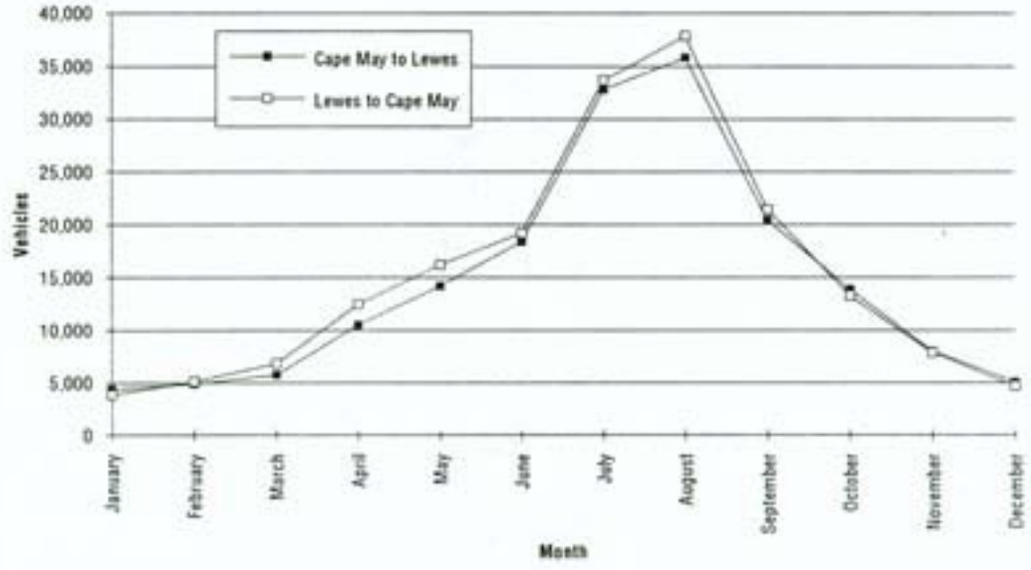


Table 3.4
1992 Revenue Vehicle and Passenger Ridership (by Month, Direction, and Type)

Month	Vehicles					Passengers				
	Passenger	> 20 ft.	Motorcycles	Bicycles	Total	Vehicle (1)	Bus	Walk-Ons	Other (2)	Total
Cape May to Lewes (Southbound)										
January	3,992	389	4	0	4,385	8,618	0	853	576	10,047
February	4,452	398	16	0	4,866	10,085	45	994	756	11,880
March	5,296	420	12	8	5,736	11,653	21	1,112	765	13,551
April	9,766	655	37	51	10,509	24,703	272	2,120	976	28,071
May	13,037	786	204	173	14,200	31,340	1,318	3,609	1,342	37,609
June	16,942	1,044	183	215	18,384	44,085	2,013	7,124	2,265	55,487
July	30,421	1,620	316	416	32,773	87,490	739	15,488	3,431	107,148
August	33,567	1,472	324	468	35,831	97,568	823	18,095	3,124	119,610
September	18,738	1,130	168	397	20,433	45,685	2,998	7,351	2,817	58,851
October	12,735	937	78	138	13,888	29,585	867	3,142	1,507	35,101
November	7,396	552	49	9	8,006	17,020	24	1,457	661	19,162
December	4,636	418	4	6	5,064	10,412	0	983	280	11,675
Subtotal	***160,978***	***9,821***	***1,395***	***1,881***	***174,075***	***418,244***	***9,120***	***62,328***	***18,500***	***508,192***
Lewes to Cape May (Northbound)										
January	3,442	417	1	0	3,860	7,648	0	864	576	9,088
February	4,591	494	1	1	5,087	10,500	0	998	756	12,254
March	6,183	628	21	11	6,843	13,893	35	1,106	765	15,799
April	11,443	953	32	43	12,471	28,840	251	2,125	999	32,215
May	14,737	1,106	183	166	16,192	35,193	1,611	3,620	1,382	41,806
June	17,520	1,303	165	196	19,184	44,995	2,372	7,068	2,259	56,694
July	31,081	1,820	339	419	33,659	89,136	899	15,386	3,454	108,875
August	35,327	1,775	298	471	37,871	103,491	488	18,090	3,043	125,112
September	19,545	1,234	254	420	21,453	49,463	3,136	7,286	2,896	62,781
October	12,133	977	35	132	13,277	28,577	929	3,055	1,511	34,072
November	7,148	635	55	7	7,845	16,545	46	1,418	645	18,654
December	4,200	444	1	5	4,650	9,478	65	944	282	10,769
Subtotal	***167,350***	***11,786***	***1,385***	***1,871***	***182,392***	***437,759***	***9,832***	***61,960***	***18,568***	***528,119***
Total										
January	7,434	806	5	0	8,245	16,266	0	1,717	1,152	19,135
February	9,043	892	17	1	9,953	20,585	45	1,992	1,512	24,134
March	11,479	1,048	33	19	12,579	25,546	56	2,218	1,530	29,350
April	21,209	1,608	69	94	22,980	53,543	523	4,245	1,975	60,286
May	27,774	1,892	387	339	30,392	66,533	2,929	7,229	2,724	79,415
June	34,462	2,347	348	411	37,568	89,080	4,385	14,192	4,524	112,181
July	61,502	3,440	655	835	66,432	176,626	1,638	30,874	6,885	216,023
August	68,894	3,247	622	939	73,702	201,059	1,311	36,185	6,167	244,722
September	38,283	2,364	422	817	41,886	95,148	6,134	14,637	5,713	121,632
October	24,868	1,914	113	270	27,165	58,162	1,796	6,197	3,018	69,173
November	14,544	1,187	104	16	15,851	33,565	70	2,875	1,306	37,816
December	8,836	862	5	11	9,714	19,890	65	1,927	562	22,444
Total	**328,328**	**21,607**	**2,780**	**3,752**	**356,467**	**856,003**	**18,952**	**124,288**	**37,068**	**1,036,311**

(1) Includes one passenger for each vehicle and additional vehicle passengers.
(2) Includes special group and senior citizen passengers.

Vehicle and Passenger Type

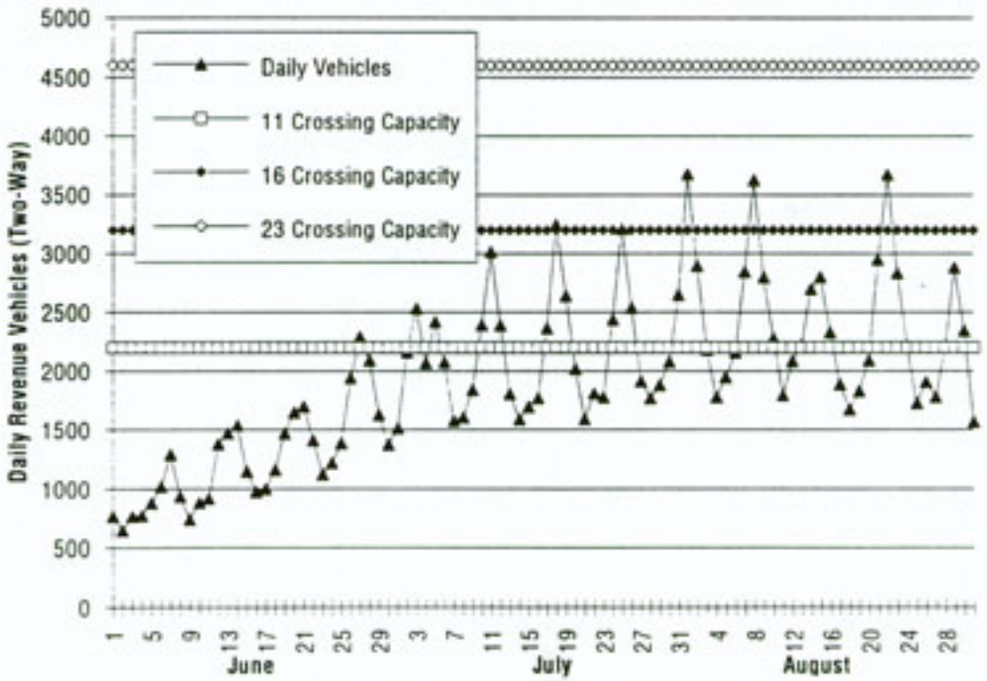
Of the 356,467 vehicles carried by the ferry in 1992, 328,328 (92.1 percent) were passenger vehicles, 21,607 (or 6.1 percent) were vehicles over 20 feet long (trucks and buses), 2,780 (or 0.8 percent) were motorcycles, and 3,752 (or 1.1 percent) were bicycles (Table 3.4). The vehicle type information exhibits a moderate seasonal variation, as vehicles over 20 feet long account for 9.2 percent of the total vehicles during the months of January, February, and December, but only 5.8 percent of the total during the remaining months of the year. This indicates a fairly consistent year-round travel demand by trucks and buses.

Of the 1,036,311 passengers carried by the ferry in 1992, 856,003 (82.6 percent) were drivers or passengers of vehicles (including passenger vehicles, vehicles greater than 20 feet, motorcycles, and bicycles), 18,952 (1.8 percent) were bus passengers, 124,288 (12.0 percent) were walk-on passengers, and 37,068 (4 percent) were special group and senior citizen passengers. The average vehicle occupancy over the course of the year (including motorcycles and bicycles) was 2.4 passengers/vehicle.

1992 Peak Season Daily Vehicle and Passenger Ridership

Daily revenue traffic and passenger ridership information has been collected and analyzed for the 1992 peak season months of June, July, and August (Figures 3.4 and 3.5). In addition to exhibiting the seasonal variations described above, this information indicates that the number of daily vehicles carried exhibits a major peak on Saturdays and minor peaks on Fridays and Sundays. The average number of vehicles carried on weekdays during this three month period was 1,716 (1,114 in June, 1,952 in July, and 2,087 in August), while the average number of vehicles carried on weekends was 2,480 (1,632 in June, 2,693 in July, and 2,987 in August). The peak daily vehicle ridership occurred on Saturday August 1, 1992, when 1,795 vehicles were carried from Cape May to Lewes and 1,882 vehicles were carried from Lewes to Cape May, for a daily total of 3,677 vehicles.

Figure 3.4
1992 Peak Season Daily Revenue Vehicles



Also shown in Figure 3.4 are the one-way crossing vehicle capacities based on 11, 16, and 23 daily crossings in each direction. As described in Section II.E, 11 roundtrip crossings are scheduled for typical peak season days while 16 roundtrip crossings are scheduled for peak days within the peak season. Based on the ferry vehicle capacity of 100, the vehicle capacity of 11 roundtrip crossings is 2,200 vehicles, while the vehicle capacity of 16 roundtrip crossings is 3,200 vehicles. As discussed in Section II.E and illustrated in Figure 3.4, it is frequently necessary for the DRBA to increase the number of scheduled crossings in order to accommodate the demand. The maximum number of roundtrip crossings which can be completed with 40 minute headways between the hours of 6:00 a.m. and 12:00 a.m. is 23, which is the maximum number of daily roundtrip crossings completed in 1992. The vehicle capacity of 23 roundtrip crossings is 4,600 vehicles, which is also illustrated in Figure 3.4.

Based on the maximum one-way daily crossing capacity of 2,300 vehicles, there is currently sufficient capacity to accommodate the daily traffic demand. However, the ferry can only provide a constant capacity of 100 vehicles every 40 minutes, or 150 vehicles per hour. While this capacity may meet the daily travel demands, the ferry currently experiences inadequate capacity to accommodate the peak period demand by time of day during the peak months (see 1992 Peak Season Traffic and Passenger Queuing Analysis below).

The number of daily revenue passengers carried during June, July, and August 1992 are shown in Figure 3.5. The average number of daily passengers carried during this three month period was 6,227 (3,739 in June, 6,968 in July, and 7,894 in August). The average number of weekday passengers during this three month period was 5,569 (3,341 in June, 6,401 in July, and 6,992 in August), while the average number of weekend passengers carried was 7,898 (4,835 in June, 8,598 in July, and 9,788 in August). The peak daily passenger ridership occurred on Saturday August 22, 1992, when 6,291 passengers were carried from Cape May to Lewes and 6,292 passengers were carried from Lewes to Cape May, for a daily total of 12,583 passengers.

Figure 3.5
1992 Peak Season Daily Revenue Passengers

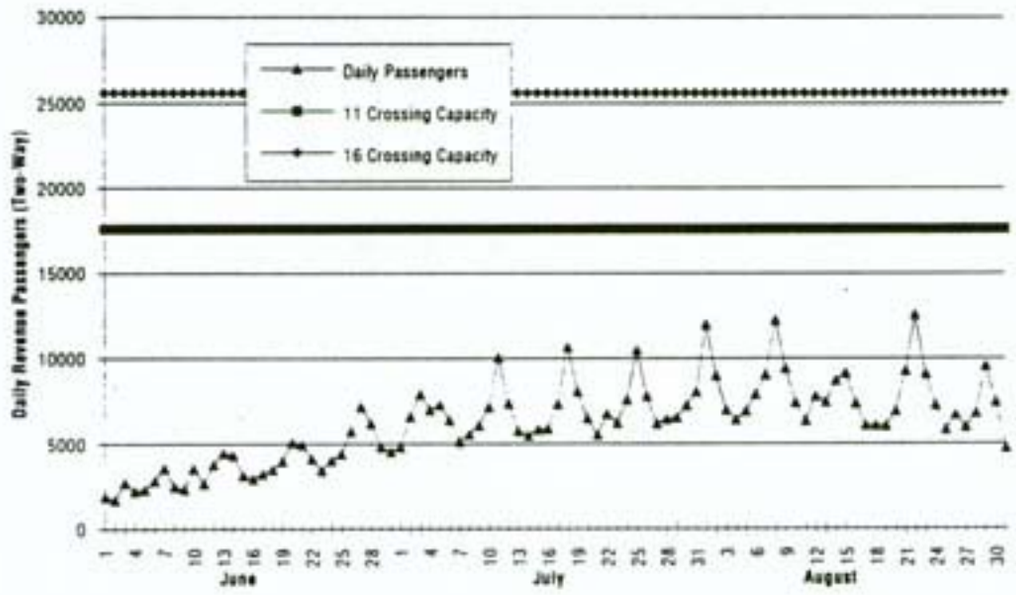


Table 3.10
Monthly Vehicle Ridership Forecasts by Direction

Month	1992	Forecasts 1995	2000	2005	2010
Cape May to Lewes (Southbound)					
January	4,385	4,800	5,700	6,500	7,300
February	4,866	5,300	6,300	7,200	8,100
March	5,736	6,200	7,400	8,300	9,300
April	10,509	11,300	13,200	14,800	16,300
May	14,200	15,200	17,700	19,700	21,800
June	18,384	19,600	22,800	25,400	27,900
July	32,773	34,300	38,100	41,000	43,900
August	35,831	37,500	41,700	44,900	48,000
September	20,433	21,800	25,300	28,100	30,900
October	13,888	14,900	17,300	19,300	21,300
November	8,006	8,600	10,100	11,400	12,700
December	5,064	5,500	6,600	7,400	8,300
Subtotal	***174,075***	***185,000***	***212,200***	***234,000***	***255,800***
Lewes to Cape May (Northbound)					
January	3,860	4,200	5,000	5,700	6,400
February	5,087	5,500	6,400	7,300	8,200
March	6,843	7,400	8,600	9,700	10,800
April	12,471	13,400	15,400	17,200	19,100
May	16,192	17,300	20,000	22,200	24,500
June	19,184	20,500	23,600	26,300	28,900
July	33,659	35,200	39,100	42,200	45,100
August	37,871	39,700	45,800	49,300	52,700
September	21,453	22,900	26,400	29,300	32,200
October	13,277	14,200	16,400	18,300	20,200
November	7,845	8,400	9,800	11,000	12,300
December	4,650	5,100	5,900	6,700	7,600
Subtotal	***182,392***	***193,800***	***222,400***	***245,200***	***268,000***
Total					
January	8,245	9,000	10,700	12,200	13,700
February	9,953	10,800	12,700	14,500	16,300
March	12,579	13,600	16,000	18,000	20,100
April	22,980	24,700	28,600	32,000	35,400
May	30,392	32,500	37,700	41,900	46,300
June	37,568	40,100	46,400	51,700	56,800
July	66,432	69,500	77,200	83,200	89,000
August	73,702	77,200	87,500	94,200	100,700
September	41,886	44,700	51,700	57,400	63,100
October	27,165	29,100	33,700	37,600	41,500
November	15,851	17,000	19,900	22,400	25,000
December	9,714	10,600	12,500	14,100	15,900
Total	**356,467**	**378,800**	**434,600**	**479,200**	**523,800**

Annual and Monthly Revenue Passenger Ridership Forecasts by Direction

Annual and monthly revenue passenger ridership forecasts have been developed by applying the 1992 passengers/vehicles ratio by month to the monthly vehicle ridership forecasts by direction (Table 3.11). The results of this analysis indicate that passenger ridership is expected to increase from 1,017,359 in 1992 to approximately 1,248,300 passengers by 2000 and to 1,497,900 by 2010. These forecasts represent increases of 23 percent and 47 percent, respectively, over the 1992 passenger ridership of 1,017,359.

Table 3.11
Monthly Passenger Ridership Forecasts by Direction

		Forecasts			
Month	**1992**	**1995**	**2000**	**2005**	**2010**
Cape May to Lewes (Southbound)					
January	10,047	11,000	13,100	15,000	16,800
February	11,858	13,300	15,800	18,000	20,300
March	13,523	14,900	17,800	19,900	22,300
April	27,810	30,500	35,600	40,000	44,000
May	36,145	39,500	46,000	51,200	56,700
June	53,294	56,800	66,100	73,700	80,900
July	106,329	113,200	125,700	135,300	144,900
August	118,954	123,800	137,600	148,200	158,400
September	55,784	58,900	68,300	75,900	83,400
October	34,203	37,300	43,300	48,300	53,300
November	19,127	20,600	24,200	27,400	30,500
December	11,642	12,700	15,200	17,000	19,100
Subtotal	***498,716***	***532,500***	***608,700***	***669,900***	***730,600***
Lewes to Cape May (Northbound)					
January	9,088	9,700	11,500	13,100	14,700
February	12,231	13,800	16,000	18,300	20,500
March	15,771	17,800	20,600	23,300	25,900
April	31,953	36,200	41,600	46,400	51,600
May	40,341	45,000	52,000	57,700	63,700
June	54,502	59,500	68,400	76,300	83,800
July	108,056	116,200	129,000	139,300	148,800
August	124,457	131,000	151,100	162,700	173,900
September	59,714	61,800	71,300	79,100	86,900
October	33,174	35,500	41,000	45,800	50,500
November	18,619	20,200	23,500	26,400	29,500
December	10,737	11,700	13,600	15,400	17,500
Subtotal	***518,643***	***558,400***	***639,600***	***703,800***	***767,300***
Total					
January	19,135	20,700	24,600	28,100	31,500
February	24,089	27,100	31,800	36,300	40,800
March	29,294	32,700	38,400	43,200	48,200
April	59,763	66,700	77,200	86,400	95,600
May	76,486	84,500	98,000	108,900	120,400
June	107,796	116,300	134,500	150,000	164,700
July	214,385	229,400	254,700	274,600	293,700
August	243,411	254,800	288,700	310,900	332,300
September	115,498	120,700	139,600	155,000	170,300
October	67,377	72,800	84,300	94,100	103,800
November	37,746	40,800	47,700	53,800	60,000
December	22,379	24,400	28,800	32,400	36,600
Total	**1,017,359**	**1,090,900**	**1,248,300**	**1,373,700**	**1,497,900**

SUMMARY OF KEY FINDINGS

Who Rides the Cape May-Lewes Ferry

- Over two thirds of ferry riders were white (92%), not aware of "A Fare To Remember" (81%), travelling by car or passenger van (73%), married (69%) or on their first trip in 1993 (68%). Walk-on passengers (23%) were more likely to be aware of "A Fare To Remember (59%), earn under $35,000 (28%), 55 and older (28%), female (25%), or single/divorced/widowed (25%). While drive-on passengers (automobile or passenger van) tended to earn $75,000 or more (84%), not aware of "A Fare To Remember" (81%), 35 to 44 (77%), male (75%) or married (74%).

- Ridership peaks on the weekends, with the rest of the week (Monday - Thursday) weighted evenly.

- Trip purposes varied, but usually were:
  visiting friends and relatives (21%),
  vacationing (16%),
  sunbathing and swimming (14%),
  shopping (12%) and,
  casino visits (11%).

- Walk-ons tend to ride the ferry to go shopping, sightseeing/touring, to dine out or to attend plays, musical or other entertainment events. They are also more often riding for the fun of it. Those driving onto the ferry are usually on vacation, sunbathing/swimming or visiting friends, relatives or the casinos.

Who Rides the Cape May-Lewes Ferry (cont'd)

- Thirty-six percent (36%) of the trips originated in New Jersey from either the beach area (20%) or inland (16%), 15% from Delaware beaches and 13% from Maryland and District of Columbia. Only 5% of the trips originated from locations in Delaware other than its beach area. Overall ninety two percent (92%) of all trips originated in six states (New Jersey, Delaware, Maryland, Virginia, New York and Pennsylvania) or the District of Columbia. Final destinations were most often the New Jersey (22%) and Delaware (17%) beach areas. Fifteen percent (15%) of respondents were going to Maryland or the District of Columbia and 14% were going to other locations in New Jersey.

- The point of trip origination or its destination was often not indicative of where riders live. This was particularly true when the trip originated from the Delaware or New Jersey beaches. You will note that Other Delaware (6%) or Delaware Beaches (3%) does not appear as one of the top five locations where ferry riders live. However, Delaware beaches are one of the top five points of origin and destination for ferry riders.

TOP FIVE AREAS BASED ON:

Where Live	Trip Origin	Trip Destination
Other NJ (25%)	NJ Beaches (20%)	NJ Beaches (22%)
Pennsylvania (14%)	Other NJ (16%)	DE Beaches (17%)
Maryland/DC (13%)	DE Beaches (15%)	Maryland/DC (15%)
New York (10%)	Maryland/DC (13%)	Other NJ (14%)
Virginia (7%)	Virginia (8%)	Virginia (8%)
NJ Beaches (7%)		

Who Rides the Cape May-Lewes Ferry (cont'd)

- Those driving onto the ferry spend more than twice as much money as those walking on ($550 vs. $210). Likewise, those who rode the ferry once in 1993 or for the first time, spend more than double what frequent riders (2 or more trips in 1993) spend.

- Ferry riders that live in Connecticut ($851) or New York ($700) spend more than most other riders. Riders who were aware of "A Fare To Remember" spent less money than most other riders (except walk-ons).

"A Fare To Remember"

- Only 19% of respondents were aware of the "A Fare To Remember" promotion. Most often they were walk-on riders (50%), those using the ferry two or more times in 1993 (23%), females (22%), single/divorced/widowed (22%) or earn less than $35,000 a year (22%). Knowledge of the promotion was just about equal among all age groups. The least aware riders were those living north of New Jersey and south of Washington, DC (92%), driving on to the ferry (90%), earning $75,000 or more (86%), males (85%), who have taken one trip in 1993 (83%) or married (82%).

- Residents of New Jersey, other than those living in the beach area, are much less aware of "A Fare To Remember" (86%) than residents in Delaware, Maryland and Pennsylvania. This despite the fact that many of these residents visit the beach area.

" A Fare To Remember" (cont'd)

- Only 25% of those aware of "A Fare To Remember" used the coupons. Coupon users were usually 55 and over (34%), walk-on riders (31%) or married (27%). Drive-on passengers (11%), single/divorced/widowed (17%) and those 18-34 (18%) were least likely to use the coupons. On average, 2 coupons were redeemed.

Ferry, its Cost and its Service

- Forty-one percent (41%) of respondents knew about the ferry from word of mouth. They were most often first time riders. Thirty-three percent (33%) personally rode the ferry in the past. Those who learned about the ferry from the brochure were less likely to be walk-ons. Newspaper (2%), billboard (2%), television (1%) and radio (1%) were not significantly mentioned. Although only 2% of the respondents indicated they used the 800 number, approximately one third had problems with the 800 number.

- Most passengers (65%) thought the price to ride the ferry was about right but the other 35% all thought the fare was too high. Drive-on passengers were much more likely to say the fare was too high. A more appropriate price would be about $15, on average, one way per carload (or a lower price minimal cost to each passenger).

Ferry, its' Cost and its' Service

- Forty percent (40%) said the average wait for the ferry was a 1/2 hour. Twenty-nine percent (29%) said there was no wait and 22% said they waited an hour. Most (81%) felt the boarding time was acceptable and of those who said boarding time was not acceptable, three quarters would not pay a premium to guarantee space.

- Ninety-four percent (94%) of respondents said the time crossing bay was acceptable. Of those saying the crossing took too long (6%), they tended to be passengers in households earning $75,000 or more (9%), males (8%), rode ferry two or more times in 1993 (8%), 18 to 34 year olds (8%) or single/divorced/widowed (7%).

- Eighty-nine percent (89%) of all respondents intend to use the ferry again. This was particularly true among those who rode the ferry two or more times in 1993 (96%), aware of "A Fare To Remember" (92%) or earn between $35K to $74.9K. First time riders were more likely to indicate that they did not plan to use the ferry again (11%) usually because they 1) lived away from the area or 2) the fare was too high. Planned repeat usage of the ferry was largely based on "enjoying the ferry ride" (24%), "relaxing/break in driving" (20%), "no traffic/faster" (17%) or convenient (12%).

Terminal and Ferry Facilities

- Both Delaware and New Jersey facilities were generally graded evenly in all categories. Sixty-nine percent (69%) of respondents used the Delaware terminal facilities and services and 58% used the New Jersey terminal facilities and services.

Terminal and Ferry Facilities (cont'd)

- Seating in the Delaware and New Jersey terminals and the ferry was more likely to be rated highly by females or those 55 and over. In all other categories in this section, the 55+ age bracket most often gave higher ratings and the 18-34 bracket most often gave lower ratings.

  (Scale: 1-poor, 2-fair, 3-good, 4-very good, 5-excellent)

- Walk-on riders are generally more satisfied with the terminal than their drive-on counterparts. Specifically, in reference to "information services", "employee assistance" and "seating area in the terminal."

Food and Food Service

- Of all respondents, 26% purchased food on the ferry, 8% purchased food at the terminal, 36% purchased food both places and 29% did not purchase food.

- There was no discernable difference between riders assessment of the food concession in the terminal compared to that on the ferry. However, relative to the ratings given the terminal facilities and services, the food concession was rated considerably lower. Less than half of the ferry riders considered the food concession excellent or very good, other than the service (52%). The food prices, quality and variety were of concern to riders. Food quality at the terminals were more of an issue with the 45-54 age bracket than with any other age group while the cost of food, both at the terminal and on the ferry, was most often rated poor by those 18-34. Younger respondents were more likely to have purchased food at the terminal and on the ferry.

Food and Food Service (cont'd)

- Sixty-six percent (66%) of the respondents who purchased food thought the price they paid for food was reasonable. The other third of the respondents (34%) thought the purchase price was not reasonable and were more often--
  - aware of "A Fare to Remember" (42%);
  - 18-34 year olds (40%);
  - used the ferry two or more times in 1993 (39%);
  - single/divorced/widowed (39%);
  - walk-on riders (38%); and,
  - earn under $35,000 (38%).

- Among riders who said the cost was not reasonable, half said the price was just too high (most often female - 57%). Fifteen percent of respondents said the food quality was poor relative to its cost, this was particularly true of those in households earning $75,000 or more (24%). "Food doesn't taste good" (11%) was the third most frequently mentioned reason why riders believed the food was too expensive.

- The fast food and healthy food categories ranked highest (24% and 23%, respectively) when respondents were asked what other food items would they have purchased. Pizza (14%, highest among 18-34 year olds), salads and fresh fruit (both 11% and highest among females) were the most popular food items.

- Eighteen percent (18%) of respondents said no additional food items are needed on the ferry or terminal. Those 55 or older (32%) or married (21%) were more likely to believe no additional food items are needed.

Other Facilities

- Almost all of the riders responding to the question (95%) wanted additional facilities or attractions, the top ten choices were as follows:

  - 39% want a restaurant (not fast-food),
    More likely to be those aware of "A Fare To Remember" (44%), use ferry two or more times (43%), walk-on passengers (42%) or female (41%).

  - 36% want an aquarium,
    More likely to be those 18 to 44 (43%), female (38%), single/divorced/widowed (38%) or on their first trip in 1993 (37%).

  - 25% want full bar service,
    More likely to be those 18 to 34 (37%), single/divorced/widowed (33%) or male (27%).

  - 24% want a maritime museum,
    More likely to be those 35-44 (28%), in households earning $35K to $74.9K (27%) or married riders (25%).

  - 20% want a playland or totland,
    More likely to be those 18 to 44 (28%), married riders (24%), females (23%) or drive-on passengers (21%).

  - 17% want a first class lounge,
    More likely to be in households earning $75,000 or more (22%), single/divorced/widowed (19%) or have ridden ferry two or more times in 1993 (19%).

Other Facilities (cont'd)

- 16% want miniature golf,
  More likely to be 18 to 44 (19%) or single/divorced/widowed (18%).

- 13% want a video arcade,
  More likely to be 18 to 44 (16%), have ridden ferry two or more times in 1993 (15%), single/divorced/widowed (15%), in household earning $75,000 or more (15%) or are not aware of "A Fare to Remember" (14%).

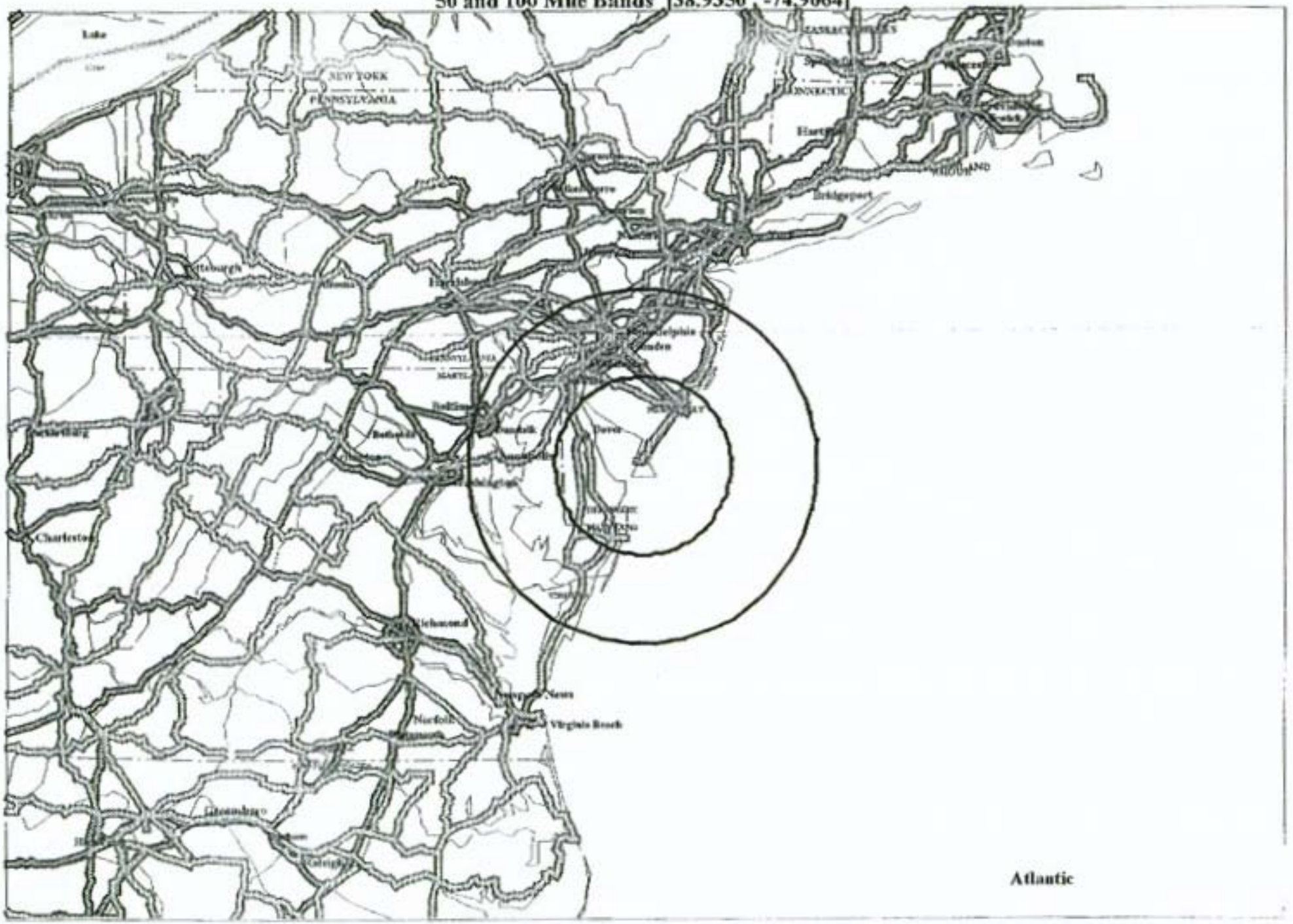
- 9% want an amphitheater,
  More likely to be 18 to 34 (11%), single/divorced/widowed (11%), aware of a "A Fare to Remember" (11%), walk-on passenger (11%) or female (10%).

- 9% want a sports arcade,
  More likely to be 18 to 34 (13%), male (12%) or single/divorced/widowed (11%).

Section 4

MARKET ENVIRONMENT

Cape May, NJ: Center of Town
50 and 100 Mile Bands [38.9350, -74.9064]



DEMOGRAPHIC TRENDS: 1990-1994-1999
Cape May, NJ: Center of Town
0.0 - 50.00 Mile Band

Urban Decision Systems, Inc.
6/22/94

	1990 Census		1994 Estimate		1999 Projected	
POPULATION	771,115		805,961		852,507	
In Group Quarters	23,702		26,725		30,723	
HOUSEHOLDS	285,859	%	303,380	%	326,708	%
1 Person	68,061	23.8%	73,463	24.2%	80,604	24.7%
2 Person	94,112	32.9%	101,092	33.3%	110,175	33.7%
3-4 Person	93,960	32.9%	100,150	33.0%	108,247	33.1%
5+ Person	29,725	10.4%	28,794	9.5%	27,764	8.5%
Average Hhld Size	2.61		2.57		2.52	
FAMILIES	202,817		214,230		230,601	
RACE						
White	619,349	80.3%	646,363	80.2%	678,512	79.6%
Black	117,644	15.3%	121,389	15.1%	129,658	15.2%
Asian/Pacific Islander	8,953	1.2%	11,303	1.4%	14,866	1.7%
American Indian	3,610	0.5%	3,996	0.5%	4,392	0.5%
Other	21,559	2.8%	22,910	2.8%	25,079	2.9%
HISPANIC ORIGIN	41,428	5.4%	49,074	6.1%	59,793	7.0%
AGE		%		%		%
0 - 5	66,586	8.6%	61,793	7.7%	61,512	7.2%
6 - 13	82,422	10.7%	96,476	12.0%	101,760	11.9%
14 - 17	39,022	5.1%	39,813	4.9%	42,497	5.0%
18 - 20	32,832	4.3%	29,320	3.6%	32,331	3.8%
21 - 24	43,477	5.6%	45,047	5.6%	41,903	4.9%
25 - 34	131,557	17.1%	131,473	16.3%	126,791	14.9%
35 - 44	111,489	14.5%	122,291	15.2%	134,959	15.8%
45 - 54	77,492	10.0%	88,261	11.0%	106,280	12.5%
55 - 64	73,381	9.5%	73,150	9.1%	79,827	9.4%
65 - 74	66,932	8.7%	69,327	8.6%	69,146	8.1%
75 - 84	35,360	4.6%	37,458	4.6%	41,749	4.9%
85 +	10,545	1.4%	11,551	1.4%	13,733	1.6%
Median Age	34.2		34.9		36.4	
MALES	374,500	%	393,102	%	417,428	%
0 - 20	112,869	30.1%	116,189	29.6%	121,628	29.1%
21 - 44	143,700	38.4%	150,604	38.3%	153,583	36.8%
45 - 64	71,896	19.2%	77,544	19.7%	89,990	21.6%
65 - 84	43,081	11.5%	45,544	11.6%	48,366	11.6%
85 +	2,954	0.8%	3,222	0.8%	3,862	0.9%
FEMALES	396,615	%	412,858	%	435,079	%
0 - 20	107,993	27.2%	111,212	26.9%	116,493	26.8%
21 - 44	142,823	36.0%	148,207	35.9%	150,069	34.5%
45 - 64	78,977	19.9%	83,868	20.3%	96,117	22.1%
65 - 84	59,230	14.9%	61,242	14.8%	62,529	14.4%
85 +	7,591	1.9%	8,329	2.0%	9,871	2.3%
Owner-Occupied Hhlds	201,787		214,853		232,655	
Renter Occupied Hhlds	84,072		88,527		94,053	

Source: 1990 Census, April 1, 1994 UDS Estimates

DEMOGRAPHIC TRENDS: 1990-1994-1999
Cape May, NJ: Center of Town
50.00 - 100.00 Mile Band

Urban Decision Systems, Inc.
6/22/94

	1990 Census		1994 Estimate		1999 Projected	
POPULATION	8,485,696		8,726,949		9,032,226	
In Group Quarters	228,460		250,515		279,015	
HOUSEHOLDS	3,122,776	%	3,284,470	%	3,494,966	%
1 Person	773,598	24.8%	840,289	25.6%	925,058	26.5%
2 Person	961,442	30.8%	1,020,590	31.1%	1,097,058	31.4%
3-4 Person	1,037,951	33.2%	1,090,590	33.2%	1,158,674	33.2%
5+ Person	349,785	11.2%	333,709	10.2%	315,128	9.0%
Average Hhld Size	2.64		2.58		2.50	
FAMILIES	2,190,192		2,276,107		2,400,172	
RACE						
White	6,483,573	76.4%	6,653,411	76.2%	6,817,679	75.5%
Black	1,696,391	20.0%	1,725,385	19.8%	1,803,002	20.0%
Asian/Pacific Islander	163,311	1.9%	202,827	2.3%	261,497	2.9%
American Indian	16,833	0.2%	16,684	0.2%	20,218	0.2%
Other	125,587	1.5%	126,642	1.5%	129,830	1.4%
HISPANIC ORIGIN	254,711	3.0%	298,854	3.4%	359,677	4.0%
AGE		%		%		%
0 - 5	736,008	8.7%	682,279	7.8%	675,605	7.5%
6 - 13	896,733	10.6%	1,040,953	11.9%	1,084,136	12.0%
14 - 17	417,841	4.9%	413,497	4.7%	424,774	4.7%
18 - 20	379,824	4.5%	329,053	3.8%	348,303	3.9%
21 - 24	508,563	6.0%	512,184	5.9%	458,548	5.1%
25 - 34	1,486,854	17.5%	1,452,473	16.6%	1,355,885	15.0%
35 - 44	1,275,894	15.0%	1,383,483	15.9%	1,503,629	16.6%
45 - 54	868,260	10.2%	961,218	11.0%	1,121,930	12.4%
55 - 64	764,907	9.0%	735,521	8.4%	768,207	8.5%
65 - 74	682,864	8.0%	710,244	8.1%	710,471	7.9%
75 - 84	361,485	4.3%	386,903	4.4%	436,139	4.8%
85 +	106,464	1.3%	119,142	1.4%	144,598	1.6%
Median Age	33.8		34.6		36.1	
MALES	4,072,109	%	4,195,158	%	4,347,518	%
0 - 20	1,239,499	30.4%	1,258,320	30.0%	1,291,840	29.7%
21 - 44	1,606,220	39.4%	1,647,292	39.3%	1,633,198	37.6%
45 - 64	775,720	19.0%	808,546	19.3%	903,290	20.8%
65 - 84	422,680	10.4%	449,629	10.7%	480,713	11.1%
85 +	27,990	0.7%	31,372	0.7%	38,478	0.9%
FEMALES	4,413,587	%	4,531,792	%	4,684,707	%
0 - 20	1,190,906	27.0%	1,207,462	26.6%	1,240,979	26.5%
21 - 44	1,665,091	37.7%	1,700,848	37.5%	1,684,864	36.0%
45 - 64	857,448	19.4%	888,193	19.6%	986,847	21.1%
65 - 84	621,668	14.1%	647,518	14.3%	665,897	14.2%
85 +	78,474	1.8%	87,771	1.9%	106,120	2.3%
Owner-Occupied Hhlds	2,142,626		2,276,423		2,457,919	
Renter Occupied Hhlds	980,150		1,008,047		1,037,046	

Source: 1990 Census, April 1, 1994 UDS Estimates

INCOME: 1990-1994-1999
Cape May, NJ: Center of Town
0.0 - 50.00 Mile Band

Urban Decision Systems, Inc.
06/22/94

	1990 Census		1994 Estimate		1999 Projection	
POPULATION	771,115		805,961		852,507	
In Group Quarters	23,702		26,725		30,723	
PER CAPITA INCOME	$13,891		$16,095		$18,928	
Aggregate Income ($Mil)	10,711.7		12,972.2		16,136.0	
HOUSEHOLDS	285,859	%	303,380	%	326,708	%
By Income						
Less than $ 5,000	14,604	5.1%	14,157	4.7%	12,378	3.8%
$ 5,000 - $ 9,999	24,886	8.7%	20,465	6.7%	20,208	6.2%
$ 10,000 - $ 14,999	24,659	8.6%	25,698	8.5%	20,295	6.2%
$ 15,000 - $ 19,999	25,382	8.9%	22,420	7.4%	22,815	7.0%
$ 20,000 - $ 24,999	24,788	8.7%	26,595	8.8%	21,391	6.5%
$ 25,000 - $ 29,999	24,394	8.5%	20,328	6.7%	27,105	8.3%
$ 30,000 - $ 34,999	24,052	8.4%	24,218	8.0%	16,592	5.1%
$ 35,000 - $ 39,999	20,929	7.3%	21,708	7.2%	21,184	6.5%
$ 40,000 - $ 49,999	34,045	11.9%	36,140	11.9%	39,893	12.2%
$ 50,000 - $ 59,999	23,632	8.3%	27,232	9.0%	33,025	10.1%
$ 60,000 - $ 74,999	21,488	7.5%	27,742	9.1%	32,965	10.1%
$ 75,000 - $ 99,999	13,291	4.6%	19,836	6.5%	29,968	9.2%
$100,000 - $ 124,999	4,789	1.7%	8,535	2.8%	14,245	4.4%
$125,000 - $ 149,000	1,703	0.6%	3,262	1.1%	6,716	2.1%
$150,000 +	3,225	1.1%	4,581	1.5%	7,653	2.3%
Median Household Income	$30,767		$34,500		$40,313	
Average Household Income	$37,472		$42,110		$48,558	
FAMILIES	202,617	%	214,230	%	230,601	%
By Income						
Less than $ 5,000	5,939	2.9%	6,611	3.1%	5,782	2.5%
$ 5,000 - $ 9,999	9,152	4.5%	6,916	3.2%	6,899	3.0%
$ 10,000 - $ 14,999	13,250	6.5%	14,501	6.8%	11,469	5.0%
$ 15,000 - $ 19,999	16,028	7.9%	11,563	5.4%	13,196	5.7%
$ 20,000 - $ 24,999	16,958	8.4%	18,775	8.8%	12,197	5.3%
$ 25,000 - $ 29,999	17,834	8.8%	12,734	5.9%	19,150	8.3%
$ 30,000 - $ 34,999	18,344	9.0%	18,732	8.7%	10,535	4.6%
$ 35,000 - $ 39,999	17,061	8.4%	15,472	7.2%	16,271	7.1%
$ 40,000 - $ 49,999	28,280	13.9%	29,789	13.9%	28,799	12.5%
$ 50,000 - $ 59,999	20,628	10.2%	22,732	10.6%	27,897	12.1%
$ 60,000 - $ 74,999	18,921	9.3%	24,366	11.4%	27,482	11.9%
$ 75,000 - $ 99,999	11,865	5.8%	17,368	8.1%	26,010	11.3%
$100,000 - $ 124,999	4,245	2.1%	7,613	3.6%	12,254	5.3%
$125,000 - $ 149,000	1,550	0.8%	2,867	1.3%	5,864	2.5%
$150,000 +	2,866	1.4%	4,113	1.9%	6,725	2.9%
Median Family Income	$36,038		$40,595		$46,863	
Average Family Income	$43,345		$48,622		$55,529	

Source: 1990 Census, April 1, 1994 UDS Estimates.

INCOME: 1990-1994-1999
Cape May, NJ: Center of Town
50.00 - 100.00 Mile Band

Urban Decision Systems, Inc.
06/22/94

	1990 Census		1994 Estimate		1999 Projection	
POPULATION	8,485,696		8,726,949		9,032,226	
In Group Quarters	228,460		250,515		279,015	
PER CAPITA INCOME	$16,104		$18,688		$22,073	
Aggregate Income ($Mil)	136,656.6		163,087.1		199,365.4	
HOUSEHOLDS	3,122,776	%	3,284,470	%	3,494,966	%
By Income						
Less than $ 5,000	159,975	5.1%	139,883	4.3%	115,485	3.3%
$ 5,000 - $ 9,999	232,485	7.4%	222,550	6.8%	206,727	5.9%
$ 10,000 - $ 14,999	216,678	6.9%	196,059	6.0%	171,730	4.9%
$ 15,000 - $ 19,999	228,061	7.3%	208,997	6.4%	194,134	5.6%
$ 20,000 - $ 24,999	236,167	7.6%	221,071	6.7%	183,340	5.2%
$ 25,000 - $ 29,999	231,678	7.4%	217,473	6.6%	229,108	6.6%
$ 30,000 - $ 34,999	232,754	7.5%	219,471	6.7%	191,460	5.5%
$ 35,000 - $ 39,999	217,518	7.0%	212,622	6.5%	186,034	5.3%
$ 40,000 - $ 49,999	386,418	12.4%	385,324	11.7%	393,589	11.3%
$ 50,000 - $ 59,999	294,212	9.4%	329,099	10.0%	365,285	10.5%
$ 60,000 - $ 74,999	290,840	9.3%	350,419	10.7%	399,154	11.4%
$ 75,000 - $ 99,999	220,798	7.1%	292,584	8.9%	399,938	11.4%
$100,000 - $ 124,999	83,054	2.7%	143,831	4.4%	212,533	6.1%
$125,000 - $ 149,000	32,704	1.0%	56,430	1.7%	109,983	3.1%
$150,000 +	58,834	1.9%	83,160	2.5%	131,976	3.8%
Median Household Income	$35,481		$40,035		$46,789	
Average Household Income	$43,761		$49,105		$56,381	
FAMILIES	2,190,192	%	2,276,107	%	2,400,172	%
By Income						
Less than $ 5,000	70,758	3.2%	67,660	3.0%	54,291	2.3%
$ 5,000 - $ 9,999	85,804	3.9%	76,395	3.4%	73,218	3.1%
$ 10,000 - $ 14,999	108,677	5.0%	98,691	4.3%	81,307	3.4%
$ 15,000 - $ 19,999	132,610	6.1%	102,975	4.5%	102,581	4.3%
$ 20,000 - $ 24,999	145,305	6.6%	138,237	6.1%	98,782	4.1%
$ 25,000 - $ 29,999	154,018	7.0%	125,822	5.5%	136,563	5.7%
$ 30,000 - $ 34,999	164,701	7.5%	149,947	6.6%	105,623	4.4%
$ 35,000 - $ 39,999	161,558	7.4%	143,852	6.3%	127,709	5.3%
$ 40,000 - $ 49,999	309,163	14.1%	293,196	12.9%	273,025	11.4%
$ 50,000 - $ 59,999	249,561	11.4%	266,034	11.7%	282,372	11.8%
$ 60,000 - $ 74,999	254,931	11.6%	300,737	13.2%	322,016	13.4%
$ 75,000 - $ 99,999	197,452	9.0%	257,709	11.3%	344,033	14.3%
$100,000 - $ 124,999	74,507	3.4%	128,890	5.7%	184,474	7.7%
$125,000 - $ 149,000	29,411	1.3%	50,164	2.2%	96,854	4.0%
$150,000 +	52,301	2.4%	74,382	3.3%	116,238	4.8%
Median Family Income	$41,952		$47,973		$55,186	
Average Family Income	$51,088		$57,487		$65,731	

Source: 1990 Census, April 1, 1994 UDS Estimates.

INVENTORY OF MAJOR EXISTING ATTRACTIONS IN THE CAPE MAY-LEWES FERRY MARKET AREA
1994

Attraction	Operating Schedule	Adult Admission Price	1993 Attendance (thousands)	Description
Local Area (50-75 miles) 1/				
Assateague Nat'l Seashore (Berlin, MD)	All year	Free	2,100	Aquarium, beaches, picnic areas, boating, fishing
Funland (Rehoboth Beach, DE)	Mid-Mar to Lab Day	Pay as you go	1,000+	Amusement park
Windsor Resort (Ocean City, MD)	Mid-June to Lab Day	Pay as you go	1,000+	Amusement park
Fantasy Island (Beach Haven, NJ)	Mem Day to Lab Day	Pay as you go	600	Amusement park
Nickels Midway Pier (Wildwood, NJ)	Mid-Apr to Sep	Pay as you go	500+	Amusement park
Trimper Rides of Ocean City (Ocean City, MD)	Mem Day to Lab Day	Pay as you go	500+	Amusement park
Barnegat Lighthouse (Barnegat, NJ)	All year	$1.00	300-500	Historic lighthouse, picnic area, fishing

MAJOR EXISTING ATTRACTIONS
(page 2)

Attraction	Operating Schedule	Adult Admission Price	1993 Attendance (thousands)	Description
Tivoli Pier (Atlantic City, NJ)	Mar-Dec	$9.95	100-300	Family entertainment center
Storybook Land (Cardiff, NJ)	Mid-May to Sep	Pay as you go	100-300	Amusement park
Morey's Pier (North Wildwood, NJ)	Apr to mid-Sep	Pay as you go	100-300	Amusement park, water park
Gillian's Wonderland Pier (Ocean City, NJ)	Apr-Sep	Pay as you go	100-300	Amusement park
Mid-Atlantic Arts Center (Cape May, NJ)	All year	$5.00	126	Historic buildings, decorative arts museum
Historic Gardner's Basin (Atlantic City, NJ)	All year	Free	100+	Maritime village, aquarium
Wetlands Institute (Stone Harbor, NJ)	All year	$3.00	45	Environmental learning center

MAJOR EXISTING ATTRACTIONS
(page 3)

Attraction	Operating Schedule	Adult Admission Price	1993 Attendance (thousands)	Description
Regional (50-100 miles) 2/				
Six Flags Great Adventure (Jackson, NJ)	Late Mar to mid-Sep	$29.95	3,500	Theme park, drive-thru safari
Independence Nat'l HS (Philadelphia, PA)	All year	Free	3,500	Historic site, Liberty Bell
National Aquarium (Baltimore, MD)	All year	$11.50	1,547	Aquarium, oceanarium
Philadelphia Zoo (Philadelphia, PA)	All year	$7.00	1,300	Zoological park
New Jersey State Aquarium (Camden, NJ)	All year	$8.50	1,200	Aquarium
Franklin Institute (Philadelphia, PA)	All year	$9.50	1,000	Science center, planetarium, OMNIMAX theater
Ft. McHenry Nat'l Mon (Baltimore, MD)	All year	$2.00	589	Historic site, reenactments

MAJOR EXISTING ATTRACTIONS
(page 4)

Attraction	Operating Schedule	Adult Admission Price	1993 Attendance (thousands)	Description
Philadelphia Museum of Art (Philadelphia, PA)	All year	$6.00	585	Art museum
Maryland Science Center (Baltimore, MD)	All year	$8.50	541	Science center, planetarium, IMAX theater
Baltimore Zoo (Baltimore, MD)	All year	$6.50	500	Zoological park

1/ Generally, attractions drawing 100,000 or more visitors per year.
2/ Attractions drawing more than 500,000 visitors per year.

Source: Harrison Price Company.

OPERATING CHARACTERISTICS OF SELECTED COMPARABLE ATTRACTIONS
1994

Attraction	Adult Admission Price	1993 Attendance (thousands)	Description
North Carolina Aquarium			
• Pine Knoll Shores	$2.00	646	Aquarium, interpretive center
• Roanoke Island	Free	589	Aquarium, interpretive center
• Fort Fisher	Free	523	Aquarium, interpretive center
Hoover Dam Visitor Center (Boulder City, NV)	$1.00	730	Museum, interpretive center
Cape Hatteras Nat'l Seashore			
• Hatteras Island Visitor Ctr	Free	250	Museum, interpretive center
• Bodie Island Visitor Ctr	Free	150	Museum, interpretive center
• Ocracoke Island Visitor Ctr	Free	150	Museum, interpretive center
Birch Aquarium (La Jolla, CA)	$6.50	500	Marine research center, aquarium
Maritime Center of Norwalk (Norwalk, CT)	$11.50	470	Maritime museum, aquarium
Virginia Marine Science Center (Virginia Beach, VA)	$4.75	328	Aquarium, marine science center
Hatfield Marine Science Center (Newport, OR)	Free	280	Marine research center, aquarium
Mote Marine Laboratory & Aquarium (Sarasota, FL)	$6.00	250	Marine research center, aquarium
Golden Pond Visitor Center (Golden Pond, KY)	$2.50	185	Interpretive center for TVA
Columbia River Maritime Museum (Astoria, OR)	$5.00	100	Maritime museum, aquarium

Source: Harrison Price Company.

AGGREGATE MARKET SUPPORT AVAILABLE TO CAPE MAY-LEWES FERRY TERMINAL ATTRACTIONS
1994 and 1999

Market Segment	Market Size (thousands) 1990	1994	1999
Ferry Passengers	1,121	1,066	1,227
Regional Resident Population			
Primary (0-50 miles)	771	806	853
Secondary (50-100 miles)	8,486	8,727	9,032
Subtotal	9,257	9,533	9,885
Overnight Tourist	4,100	3,900	4,500
Total	14,478	14,499	15,612

Source: Delaware River and Bay Authority, Urban Decision Systems, Inc., and Harrison Price Company.

MARKET CAPTURE RATES OF SELECTED VISITOR CENTERS
1992-93

Attraction	Annual Attendance (thousands)	Market Size (thousands)			Market Capture Rate 2/
		Resident 1/	Tourist	Total	
Expressed As Percent of Visitors Destined to Area:					
Cape Hatteras Nat'l Seashore					
• Hatteras Island	250	...	...	2,099	11. 9%
• Bodie Island	150	...	...	2,099	7. 1
• Ocracoke Island	150	...	...	2,099	7. 1
Hoover Dam-Lake Mead	730	...	...	8,445	8. 6
Golden Pond-Land Between the Lakes	185	...	...	2,329	7. 9
Expressed As Percent of Resident/Tourist Market Size:					
Hatfield Marine Science Ctr	280	2,456	2,000	4,456	6. 3%
Virginia Marine Science Ctr	328	1,531	4,000	5,531	5. 9
Birch Aquarium	500	2,651	14,500	17,151	2. 9
Mote Marine Laboratory	250	2,845	7,500	10,345	2. 4

1/ Population within 50 to 75 miles.
2/ Total attendance divided by total market size.

Source: Harrison Price Company.

Section 5

PRELIMINARY VISITOR CENTER CONCEPT PLAN

3.0 Visitors Centers Development Programming

3.1 The Development Process

The preparation of concept plans for ancillary facilities at the Terminals was an integral part of the overall Master Plan process for which DRBA has retained Wallace Roberts & Todd (WRT), Architects, Landscape Architects and Environmental Planners, and S. T. Hudson Engineers, Inc. (STHE), Marine Engineers as consultants. The consultants were charged with projecting future ferry ridership, recommending short and long-term improvements to vessel and landing facilities and the ferries' land-side support system, and proposing appropriate ancillary facilities.

3.1.1 Consideration of Ancillary Facility Types

DRBA staff had considerable internal discussion about the potential value of developing some form of recreational/educational facility at each Terminal before the Master Plan Study began. Anecdotal remarks from bored ferry passengers waiting sometimes for hours in their cars or buses were frequent. The current Public Terminal Buildings contain fast-food restaurants and small gift shops, but the typical wait for the next ferry averages ½ hour, in off-peak months and in the peak months can extend from 1½ to two hours. Clearly, here is an "audience," if the right "attraction" could be developed. Further, DRBA's mission includes economic development, i.e., jobs and catalytic facilities at each Terminal, that would have a positive impact on local economies.

Ferry terminals are different from train stations or airports, in that while the rider changes mode, he or she puts his/her vehicle on a boat for 70 minutes, then continues on the road to his or her destination. Examination of other ferry terminals such as Seattle, Washington, or Staten Island, New York, and many smaller ferries, do not indicate much commercial development potential at the terminals except for food service generated by ferry passengers.

However, the Cape May-Lewes Ferry is somewhat unique, in that a very high proportion of its passengers are tourists, and the Terminals are located in areas with a large number of summer residents.

Strictly commercial facilities including small "theme parks" were ruled out because they would be competitive with nearby shopping centers and seashore amusement areas. A part of the Cape May-Lewes Ferry patronage is people who park their cars in Cape May and

travel by Ferry and shuttle buses to Delaware Resort attractions in and around Rehoboth Beach, DE, and from Delaware to the Cape May Terminal and thence by shuttle bus to Cape May.

The consultants and DRBA staff then inventoried the museum, aquarium and nature centers in or near the primary (5-county) ferry service area and determined that there were many facilities, particularly those operated by U.S. Fish and Wildlife Service, Audubon Society, the Wetlands Institute and various nature conservancies. However, none compared with the Virginia Marine Science Museum at Virginia Beach, or three North Carolina Coastal Nature Centers that were suggested as analogies.

The nearest large aquariums are the New Jersey State Aquarium at Camden (NJ), with 120,000 gross square feet and outdoor exhibits, and the National Aquarium at Baltimore's Inner Harbor, with 247,000 gross square feet. Both are beyond the ferry's primary service area, but within the secondary area. Discussions were held with officials at Camden who saw real potential for the right sized facilities with the right kind of exhibits as helping rather than being competitive with existing local as well as regional facilities.

During a two-week period of August 1993, DRBA staff held 3,200 passenger interviews based on a detailed questionnaire[5] on the ferry. Some 22% of those surveyed were enroute to New Jersey beaches, with another 14% headed to other New Jersey locations. 17% of respondents were going to Delaware resort towns and 15% to Maryland. 20% were on vacation, and 12% were enroute to or from Atlantic City casinos.

Waiting time for the ferry was rated as "unacceptable" by 19% of respondents and of the 95% who wanted other activities or attractions at the "terminal or on the ferry, the top four activities or attractions mentioned were restaurant (other than fast-food), aquarium, maritime museum, and full bar-service."[6]

It was therefore determined to pursue the feasibility of two Centers which would focus on interpreting the natural, cultural and historical ecosystem of the Delaware Bay. Of all similar aquarium/museum's, only that at Monterey, CA, has such a focus on a single physiographic entity, on Monterey Bay.

The consultants have recommended this Development Programming for ancillary facilities as the first in a three-stage process. In this first stage, the consultants have outlined the proposed purpose and overall interpretive mission and the separate themes for each Center, translated these into two Visitor Experience descriptions, and developed possible Storylines for each Center, and candidate Exhibits for each Storyline.

The second stage is to present the above, in the context of preferred Master Plan alternatives for the overall Terminal facilities, to governmental, institutional and public representatives at working sessions. With feedback from these sessions, and advice from individual governmental and educational experts, the consultants will prepare pre-schematic conceptual plans.

sketches and order-of-magnitude cost estimates. These will be translated into design guidelines and a draft Request for Proposals (RFP's) for each of the Interpretive Centers.

With DRBA Commissioner approval, the RFP's will be issued to design/engineering/programming/exhibit design teams for response and selection. It is recommended to choose the Center directors as soon as possible so that they can participate in the final programming, design and construction process, and to appoint an advisory committee for each.

The third stage of detailed interpretive programming, selection of specific Storylines, exhibit and building design, engineering and costing will then commence. Concurrent with this third stage, other elements of the Master Plan such as construction of needed maintenance facilities will also be underway.

3.2 The Purpose of the Delaware Bay Visitors Centers

The purpose of the two Delaware Bay Visitors Centers is to enhance the experience of the ferry passengers, to increase ferry ridership, particularly in off-peak periods (October through May), and at the same time, to serve as an educational/recreational destination for tourists, school-children and the public at large.

It is DRBA's intent that the Centers not only be fun to visit, with a strong recreational orientation, but also use this opportunity to make visitors understand how the Bay evolved, how it works as an ecosystem, who uses it, what a great resource it is, and why it must be preserved.

3.2.1 The Interpretive Mission Statement

In general terms, the Centers are instruments for public benefit through environmental, cultural, and historic education about the Bay. Environmental education takes as its challenge to encourage the growth of an enlightened citizenry interested in "the dynamic balance between the quality of life and the quality of the environment," and committed to utilizing the resources of the Bay in such a way as not to jeopardize the Bay's value for future generations, the definition of "sustainable development." The cultural and historic educational challenge is to show how humans in the past have and currently are part of the ecosystem, how they have interacted with nature and the environment of the Bay as a resource over time, and how important that resource is to them now and in the future.

The Delaware Bay is defined as the part of the overall Delaware Estuary downstream from the tidal portion of the Delaware River. The Bay and the River meet in a transition zone between Philadelphia, PA and Wilmington, DE with the center of the zone at approximately the Delaware State Line.[7] The Upper Bay is called the Upper Estuary, above the Cohansey River and Bombay Hook; the Lower Estuary, lies below the Cohansey River in New Jersey

and Bombay Hook in Delaware and runs to the Mouth, between Cape May Point and Cape Henlopen. The Nature Conservancy has recently added the Delaware Bay to its "Last Great Places" initiative, whose purpose is to identify "creative techniques to balance conservation with sustainable economic uses."[8]

3.3 The Themes of the Centers

Within the overall Mission Statement, the two Centers will be different but complementary in themes and exhibits, so that visitors will be induced to go to both, even though each Center will deal with the Bay holistically, that is, emphasizing the organic or functional relationship between the parts and the whole ecosystem.

The major theme at Lewes will be Maritime, but a different kind of maritime focus than at Salem, MA, or the Newport News Maritime Museum in Virginia. It will deal with all of the Bay's ecosystem including the estuarine marshes, and the other elements of the natural environment from the maritime, (sailor, pilot, fisherman, boater, canoeist, diver i.e., human) point of view. It will overlap to a degree with the theme of the Cape May Center, but with different storylines.

The major theme at Cape May will be Environmental, with again a different kind of environmental focus than that found at most aquariums or nature centers which are dedicated to natural phenomena and systems for their intrinsic interest. The idea of the Cape May Theme is on how natural systems evolved over time, work today performing functions in their interrelationships, and what trends are in view and how they will affect the Bay ecosystem.

3.3.1 The Visitor's Experience

The Approach

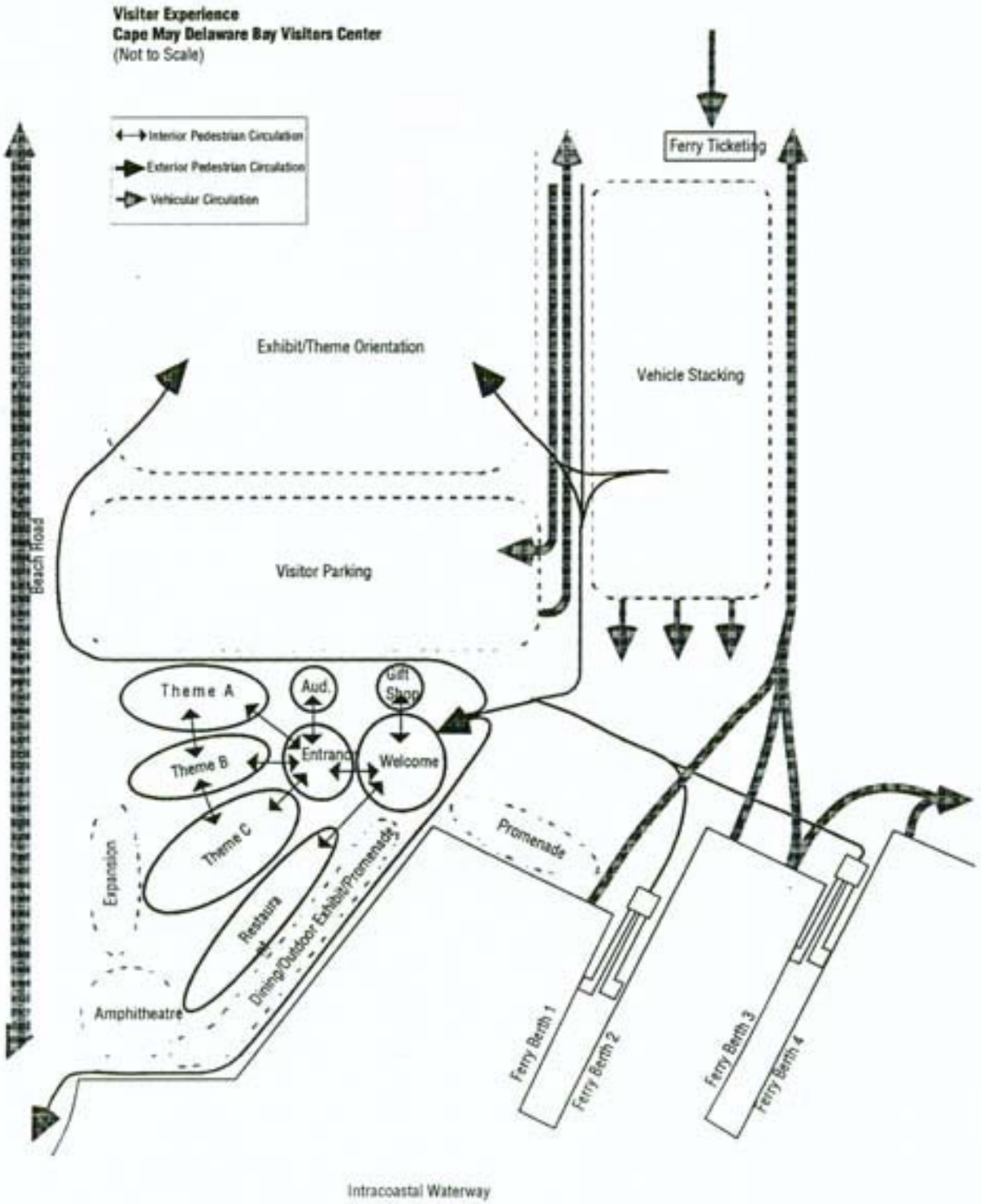
The visitors to the Centers will come by a variety of modes. First are those who come on foot or bicycle and plan to ride the ferry, or have come off the ferry. At both Centers provision is made for separate traffic-free access and secure storage of bicycles, with lockers in the Welcome Hall of the Center.

People coming by car to the ferry, have, at both Terminals, the option of going through the Toll Booths, entering the Staging Area, and while waiting for the ferry, visiting the Center. Alternatively, arrangements are being made through a reservation system whereby people can drive to the Center, park their car, then on exiting, drive to the Toll Booth from which they are placed in a line for their reserved ferry.

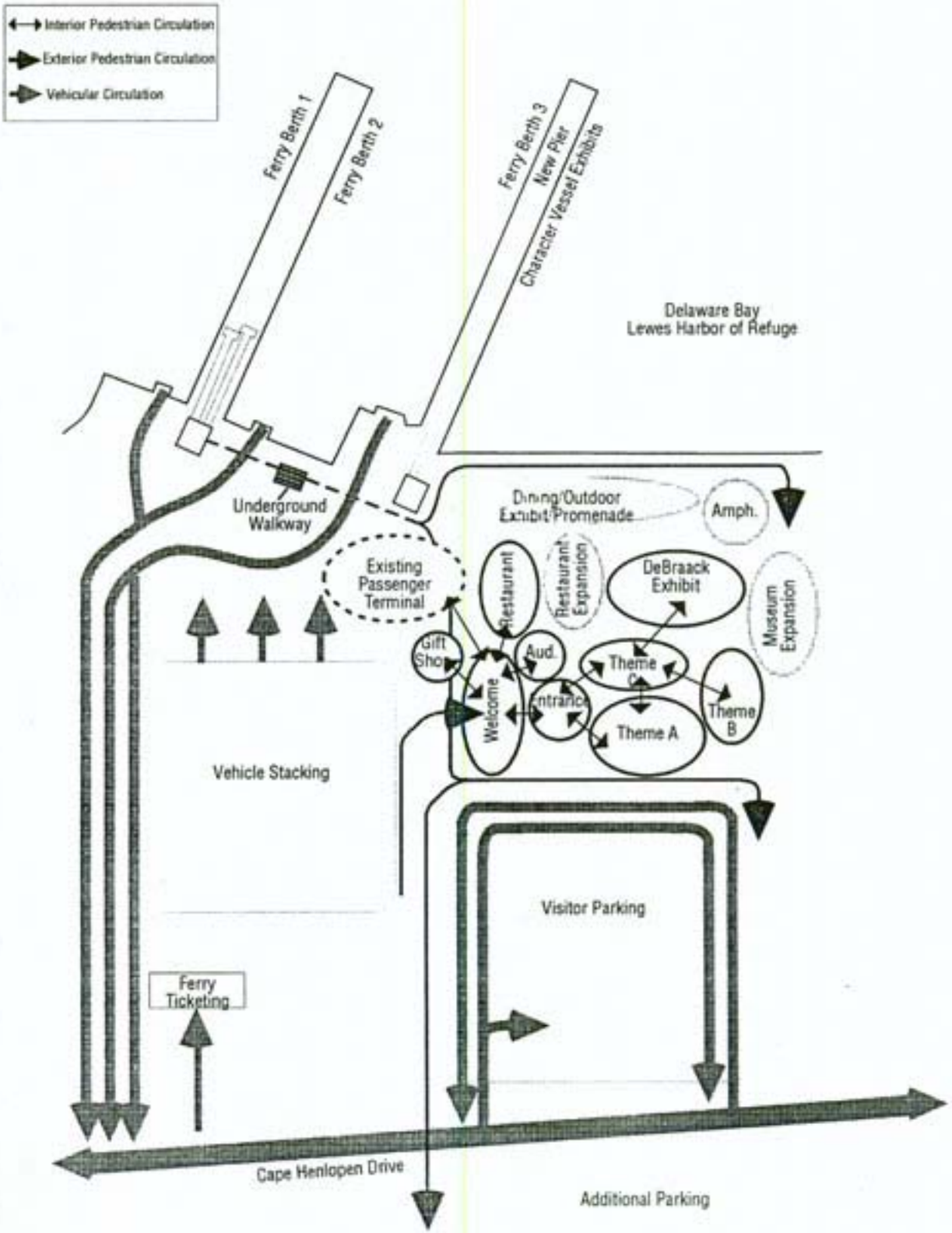
Many of the ferry riders come by tour bus, which can follow the same route as passenger cars. Allowance has been made at the Cape May Terminal for people who come to Lewes by

car, to walk on the ferry ($4.50 instead of $18.00), and to be picked up at a special depot by casino buses to Atlantic City, or by shuttle buses to Cape May. The reverse also operates for people who park at Cape May, take the ferry and at the Lewes Terminal take a shuttle bus to Lewes, the Route 9 shopping plaza, or to Rehoboth Beach.

At both Cape May and Lewes, direct vehicular access roads to the Centers allow the option of avoiding the ferry traffic entirely. At Cape May, Center traffic follows Lincoln Drive past



Visitor Experience
Lewes Delaware Bay Visitors Center
(Not to Scale)



the Ferry Toll Booth entrance to the south, and then turns south on a new road parallel to the staging area. School and tour buses that follow this route turn west at the parking lot, go around the lot to drop passengers off near the Welcome Hall, and then proceed to remote parking along eastbound Lincoln Drive to be recalled by radio. Four bus layover slots are for casino and shuttle buses close to the ferry passenger ramps.

At Lewes, ferry-bound traffic moves east in a single moving lane to the Terminal entrance. A left-turn lane provides for cars turning to the toll booths, with the light activated by a motion-detector. A thru-lane is provided for traffic headed further to the east. Out-bound traffic from the ferry will move south in two lanes with a motion-activated red light stopping west-bound traffic from proceeding and mingling with ferry-traffic. Ferry traffic that is bound for the east to Cape Henlopen State Park or the Center, or the residential area, can turn east, drive to a left-turning lane, and thence turn to destinations east of the Terminal.

At the main entrance to the Center, an intersection serves as a focal point for entry to the Center, slows down traffic from the east, and can be the new entry point for the State Park. Entrance for all traffic to the Center will be at the eastern end of DRBA's property to allow right-hand drop-off at the Center. Traffic will exit from the Center at either the western or the eastern end. Bus parking will be provided in the Center's parking area.

Entering the Centers

The welcome halls are the main point of entry to the Centers albeit, at both, the visitors can enter the restaurants separately from the Ferry landings, the boardwalks, the Center parking lots, or from the Ferry staging areas. The welcome halls provide access to the restaurants, the gift shops, the auditoriums, restrooms, information booths, and security police. They also provide for ticketing via an entrance hall to the museums. Each auditorium can be entered directly from the welcome hall without a ticket, or from the entrance hall of the Center as part of a ticketed trip.

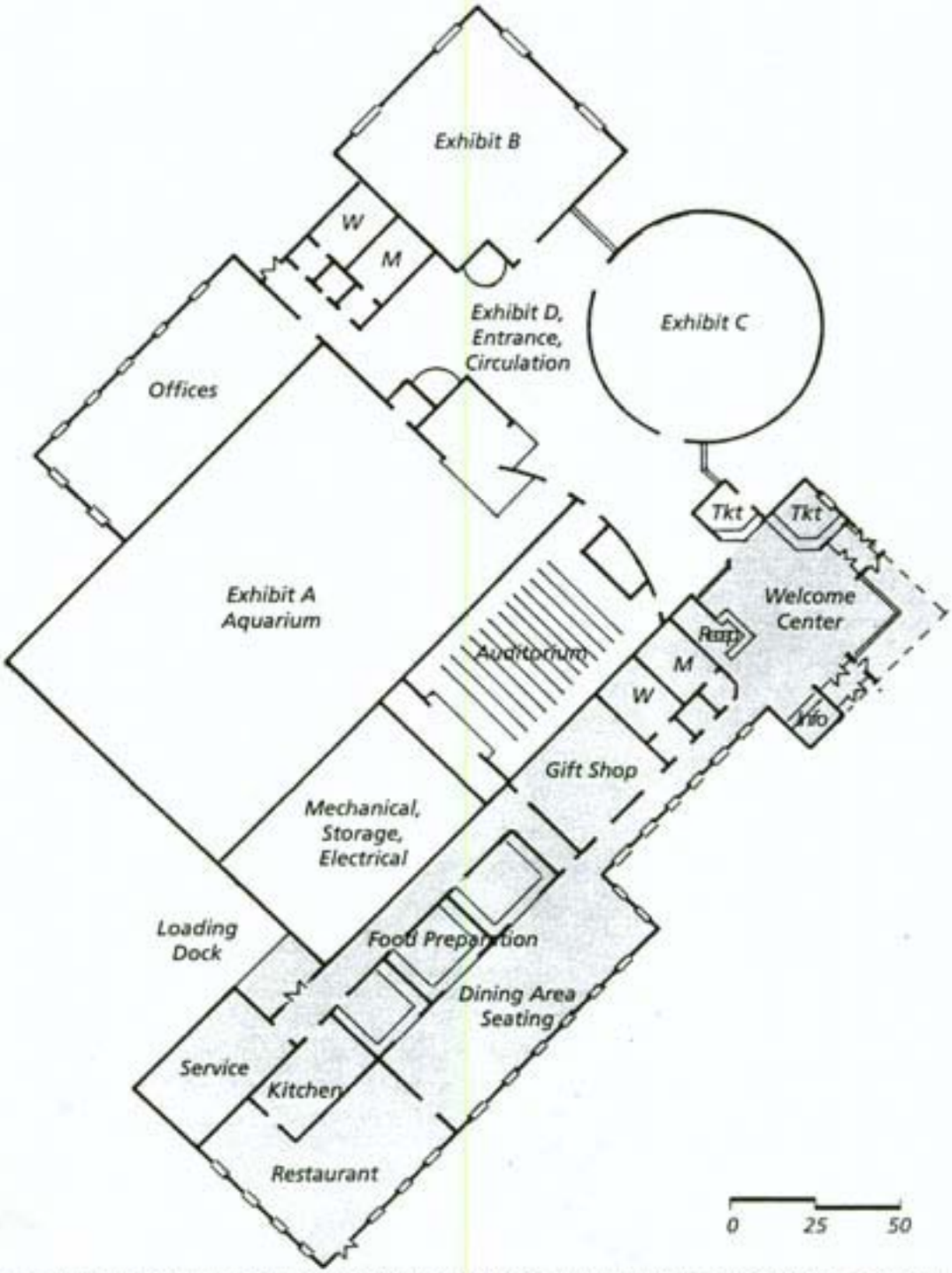
The Center Entrance Halls

Within the ticketed area each Center has a large Entrance Hall which will be designed for a short visit of ½ hour or less. Its exhibits will narrate short versions of the Storylines and Themes of the entire Center. Leading from the Entrance Hall will be the Auditorium with a seating capacity of 100 persons for guided groups and special educational and recreational events. Each Center will ultimately have three or four main Exhibit Rooms leading from the Entrance Halls, with one or several "Storylines" as the organizing outline for the exhibits.

A number of Storylines for each Center are suggested, below, as illustrative only. Within each Storyline, possible exhibits are outlined. Some exhibits are static and "self-explanatory" to the viewer; others are interactive, that is, the viewer can to varying degrees manipulate the exhibit; some will need a "teacher" or docent, although Acoustiguides[9] will also be available; finally several exhibits will create simulated or real environments for the visitor to actually experience parts of the Bay. Each exhibit should be designed for a 10-12 minute span of attention and arranged in such a way that exhibits can be easily by-passed if crowded, or the

visitor lacks interest or time. A normal unescorted visit, in each exhibit room, is expected to take 30 minutes on average.

The Mission, the Themes, the Storylines, and the possible exhibits will be the basis for further discussion and modification upon completion of the Master Plan and the beginning of Stage Three. During programming, design, and construction of each Center, the Storylines and exhibits will be reexamined and confirmed or modified by experts retained as members of the design teams, and by advisory groups convened for this purpose.



Schematic plan of proposed new Passenger Terminal facility (shaded) and Visitors Center at the Cape May Terminal

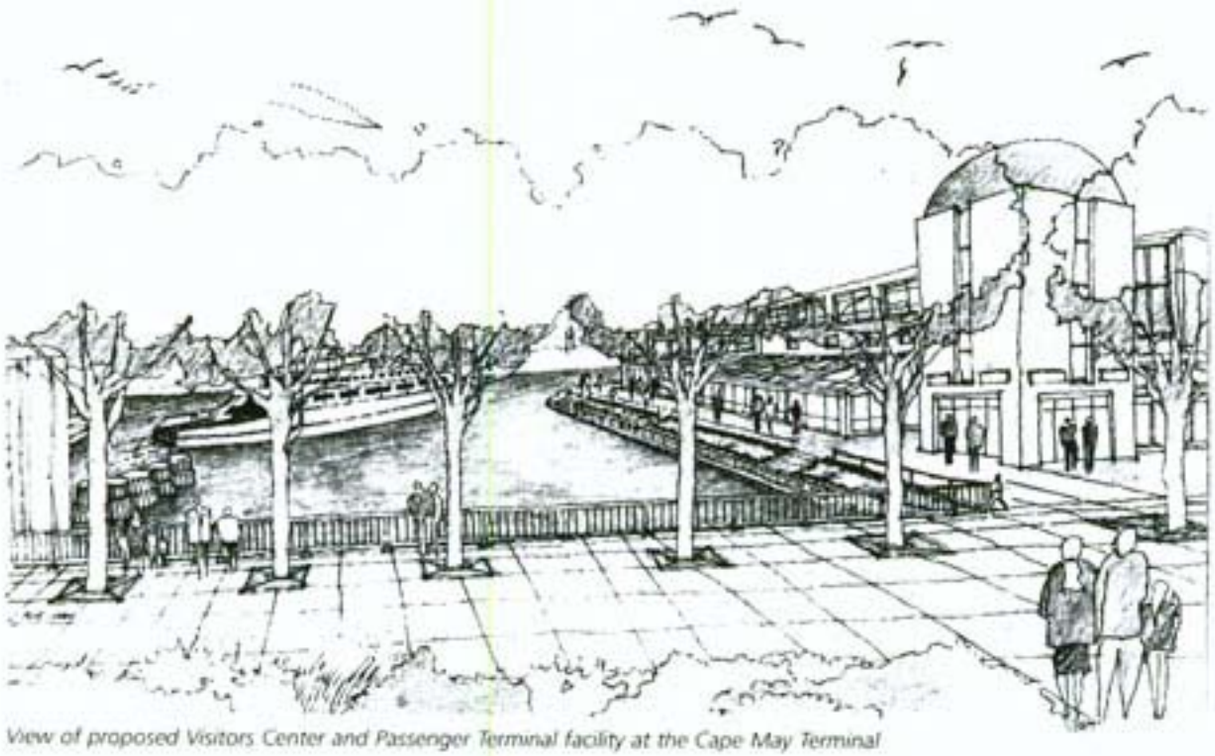
3.3.2 The Cape May Visitors Center Theme and Candidate Storylines

The Cape May Center will emphasize the Bay region as a natural ecosystem, to include geological origins, evolution, current state and issues about the future. It may include a small aquarium, an auditorium and teaching space, and interpretive exhibit space that will use advanced technology for shows, demonstrations, and lesson areas, and portable earphone tour guides. The nature of the water/land relationship in the estuarine zones and beaches, the food web, water, land, and aerial life will be portrayed in exciting, educational and entertaining ways. Both "sides" of the Bay would be included, of course, with visitors encouraged to visit the complementary Center across the Bay, to get the full story.

Storyline A - How the Bay Was Formed and How It Works

Exhibit 1 - How the Bay Was Formed
Through use of models, film and slides, the geological evolution of the Eastern Coastal Plain and the Delaware Bay will be portrayed from early Mesozoic era to the present emphasizing the natural processes that were at work and that continue today to affect the Bay Region ecosystem. Pictures of what the Bay was like at different periods (Triassic, Jurassic, etc.) and how life forms evolved can be portrayed on touch-button demand with voice or text descriptions and interactive video as at the Philadelphia Visitor Center at Independence Mall.

Exhibit 2 - The Delaware Watershed and Water Quality
Using computerized graphics, this interactive exhibit will explain the concept of watersheds, the Delaware Watershed and its relationship to the seamless web that is the overall Delaware Watershed, Estuary, and the Delaware Bay portion. The visitors can type in their home



View of proposed Visitors Center and Passenger Terminal facility at the Cape May Terminal

town (or other city), and the computer will identify the location and vital statistics of that part of the Watershed (i.e., land development patterns, water quality of streams and the Bay adjacent to the watershed, and the diversity and quality of natural habitats in the watershed). The computer could describe the sources of pollution in the watershed (i.e., agriculture and sedimentation and pesticides, and residential/commercial development, sewage treatment and nitrogen levels) and actions which can be taken to improve the water quality in the Delaware Bay.

A "water budget," or model of the Delaware Watershed's flow of fresh water from the sky, to land, to groundwater, to aquifers, through human use to effluent, can illustrate the problems of aquifer draw-down and salt water intrusion in the aquifers.

Exhibit 3 - How the Natural Ecosystem of the Bay Works
This exhibit will go from the general evolution and watershed above into the details of the interaction of the various natural processes at work: geology, subsurface hydrology (aquifers, groundwater), surficial hydrology (waves, tides, stream) ecological subregions (marshes) and their ecotones, (where two drastically different environments meet and interact such as the beaches) the natural life, vegetation and plant communities, wind and climate.
Exhibit 4 - What Is Being Done to Protect the Bay
Humans have intervened in the natural processes at work in the Bay Region, often ineffectually and at their peril. This exhibit will describe the efforts at beach stabilization vs. natural erosion, pollution control, dredging, filling of wetlands, endangered species protection, and who controls, determines, advises, and is concerned about any and all parts of the Bay Region. Film and TV screens along with computer models and diagrams will be utilized.

Storyline B - Natural Life in the Bay Today

Exhibit 1 - Ecological Subregions of the Bay's Natural Ecosystem
Aerial photographic essays with closeup and zooms will illustrate different sub-regional ecosystems of the Bay, what lives in them, the role they play in the whole, what changes have and are occurring, and their ecotones. Wetlands, marshes, beaches, uplands will be portrayed as ecosystem environments as well as the various zones of the Bay and ocean.

What is meant by the importance of bio diversity will be stressed. Charts and tables start illustrating the numbers and classes of species, with photographs available by touch computer screen technology which will let the animal, mammal, or fish describe its characteristics and habitat.

Exhibit 2 - "If I Were an Eagle, or Shark," etc.
This is an interactive exhibit. At an even greater level of detail, of the individual bird, animal or fish or crab, (through a combination of micro and macro-photography and computerized simulated environments), individuals can decide they want to see life from the perspective of a wide variety of the species in the Bay by manipulating the computer keyboard. They then can ask the computer questions, such as "what do I like to eat," "where do I live, in different parts of the year," "what am I afraid of, how do I mate, and any other appropriate descrip-

appropriate descriptions of my habitat." At the start, perhaps 50 species can be programmed with additions and replacements over time. Endangered species may be featured.

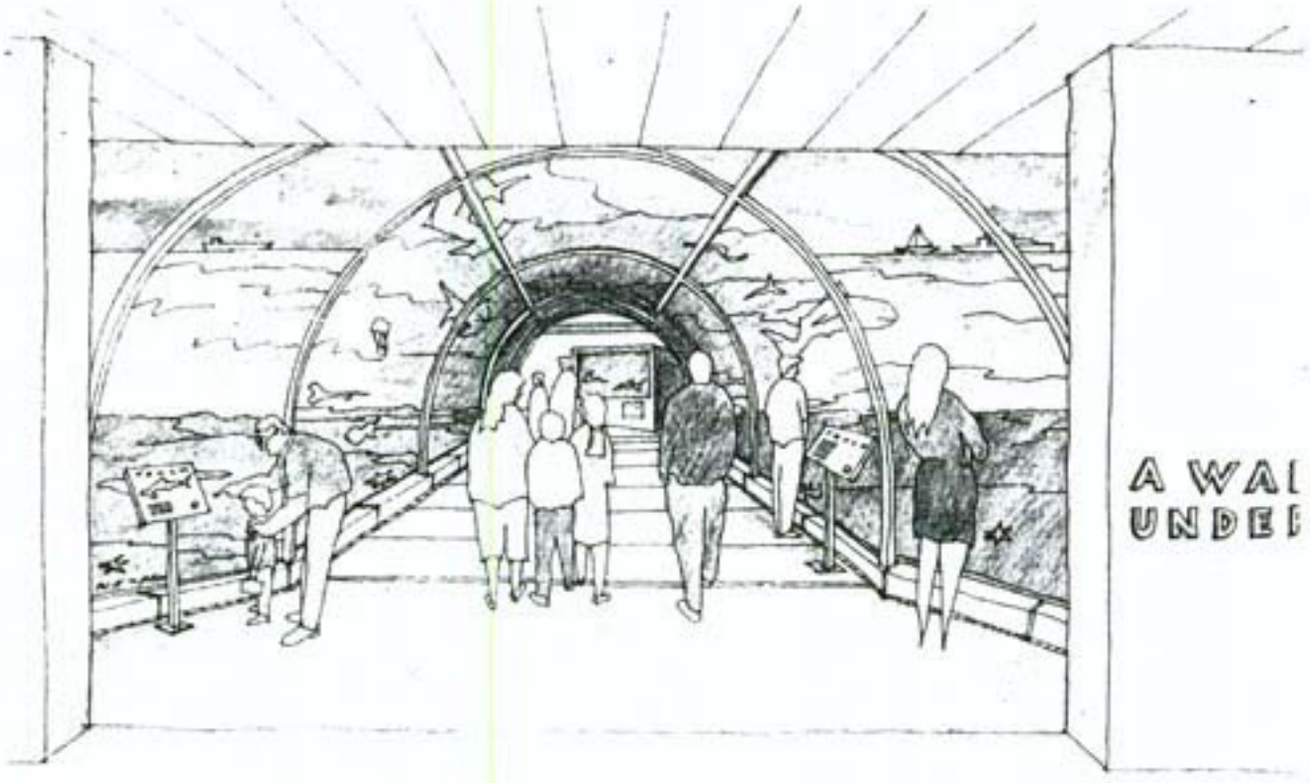
Storyline C - Experiencing the Bay Underwater (in a later phase)

Exhibit 1 - A Walk from the Bay to the Ocean Floor
In the culminating natural exhibit, a 230,000 gallon tank will feature sharks and other compatible aquatic life. An acrylic tunnel 10' in diameter through the tank will have an 8' moving walkway to carry visitors slowly through the 50' long, 30' wide, 20' deep tank. Ramps leading to and from the tank will have small tanks illustrating the waves at the beach, and, progressively, as one walks into the water, appropriate fish found on the ocean floor around wrecks, including touch tanks for part of the route.

The Atlantic Ocean off Delaware Bay is one of the major breeding grounds for sharks in the world. The how and why of this phenomenon will be explained with Acoustiguides available.

Storyline D - Cultural and Historic Cape May

Storyline D will feature Cape May's cultural and historical evolution, from the time of the Kecheneches, a band of the Lenni Lenape Indians who first hunted and fished through the visit by Henry Hudson in 1609, Captain Cornelius Mey (May), in 1620, who gave the then island its name. From the early 1800's on, Cape May became famous as "Queen of the Seaside Resorts."[10] Exhibits can include interactive videos that show past splendors as well as



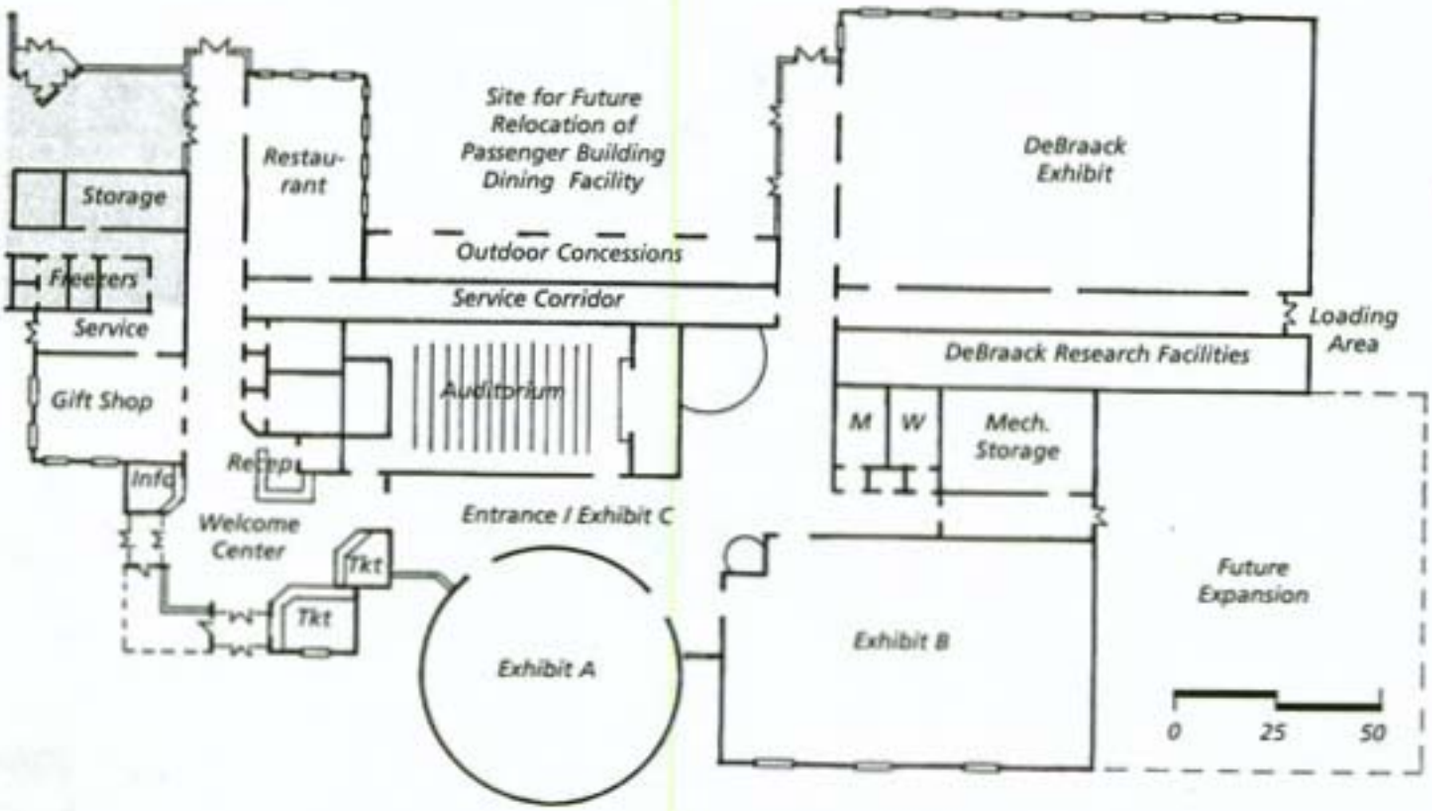
View of "walk from the Bay to the ocean floor" exhibit

Cape May's astounding stock of wooden Historic Victorian buildings with the message to visit the "real thing."

Outdoor Exhibits

Areas are planned for outdoor exhibits. To the north of the Cape May Center lies 24± acres of property owned by DRBA. A small portion has been tentatively classed as wetlands meadow, man-made from stormwater drainage. The remainder is upland vegetated with shrubs, small trees and poison ivy. A pond was once a central feature. Historically it was all marshland. This area can become a natural habitat with the pond and marsh recreated with elevated wood walkways and viewing platforms for beach and bird watching. The Delaware Bay is the second most heavily visited flyway in North America.[11]

The second area for outdoor exhibits is along the breakwater opposite Ferry Berth #1 and the Intracoastal Waterway. The third is the area around a small 50-seat outdoor amphitheater with the audience facing the south so that the drama of ferry arrival and departure can enhance the speaker/actors/teachers presentations.



Schematic plan of proposed Visitors Center (Maritime Museum) and remodeled Passenger Terminal Building (shaded) at Lewes Terminal

3.3.3 The Lewes Visitors Center Theme and Candidate Storylines

The Lewes Center will view the Bay's regional ecosystem from a primarily maritime, cultural and historic perspective, bearing in mind that an ecosystem concept by definition is that a of a seamless web, with a substantial natural environmental component. The Lewes Center will portray the archaeological and cultural history from prehistoric, through the waves of Native American and EuroAmerican settlement to the present, including the current state, issues, and the future of people and their impact on the environment on both sides of the Bay. Epochal events such as the advent and influence of the Intracoastal Waterway, and Delmarva Canal, on shipping and boating, will be portrayed. Other events and their residual artifacts such as story of the HMS DeBraak will be featured. Hurricanes and their influence on people is a part of both natural and cultural interpretations. The story of the Ferry, up-to-date data on who are the visitors, and the transportation role of DRBA will be part of the Storylines.

Storyline A - The People of the Bay

Exhibit 1 - Prehistoric Settlement
What was here before humans arrived? Evidence of prehistorical occupants, archaeological findings, the coming of the first humans, what was happening elsewhere in the world can be dramatized. Exhibits are largely static with use of videos and computers to relate to the world time line, i.e., what was happening elsewhere.

Waterside view of proposed visitors center at Lewes

Exhibit 2 - The First Settlers and the Age of EuroAmerican Contact with Native Americans
The first Native Americans were the Lenni Lenape Tribes of Delaware and New Jersey. Where did they come from? The waves of specific explorers and settlers. What kind of people were they? How did they live. The oldest habitation. What did they eat? Were they isolated, or in touch with each other. The founding of Zwaanendael and its demise. The settlement of Lewes. This exhibit should make use of dioramas and videos photographed into a seemingly live sequence with voice-over descriptions mixed with photographs and videos of actual historic places in Lewes and Cape May.

Exhibit 3 - The People Today and Alternative Futures
The facts and figures of today's settlements, resorts, commercial development, jobs, ethnic mix, the Jersey Coast, Dover Air Base, Lewes, Rehoboth Beach and Bethany Beach, Cape Henelopen State Park, new development of U.S. Route 13 will be portrayed in visual form, and public issues currently at controversy will be described, e.g., waterfront development and property rights. A light-responsive interactive model of the Bay would provide answers to quiz questions.

Exhibit 4 - Anecdotal Oral History and Trivia Pursuit
Play a game for tickets by picking topics, listening to oral history taped by multiple persons, and then answering quizzes of trivia pursuit.

Storyline B - Down to the Bay in Ships

Exhibit 1 - Maritime History of the Bay
From earliest EuroAmerican settlement to the present - a history of shipping -- commercial and pleasure craft -- the Revolution, including the sinking of the HMS DeBraak, the pirates of the Bay, the wrecks and storms, the World War I and World War II history, the lookout towers and the forts, and shipping today, both commercial, and pleasure.

Exhibit 2 - Navigating the Bay
This is an exhibit that could be sponsored by the U.S. Coast Guard and the Pilots Association. Panels about navigation, vessel information, how the Pilots operate, the channel dredging, the Intracoastal Waterway, the Delmarva Canal, lessons on navigation, and finally a "flight simulator" Ferry trip across the Bay with the visitor at the captain's wheel, with different wind and tide and traffic simulated by computer. Part of this is the "Ferry Story" to include how the Ferry operates and its future.

Exhibit 3 - Fishing In the Bay
This exhibit will result from historic records and a hundred anecdotal interviews with fishing captains about how they go about looking for what kind of shell and fin fish, why the commercial industries have declined, where the wrecks are, all tied to computers that contain the data beforehand, and the visitor asks the questions about, say, shad, or blue fish, or flounder, etc. using video computers. The Bay was at one time the whaling capital of the Eastern Seaport. What went on and what happened could form a major part of this exhibit.

Storyline C - Experiencing the Bay Afloat and Ashore (in a later phase)

Exhibit 1 - On the Bay in a Storm
This maritime exhibit could take place in the cabin of a motor cruiser constructed like a flight simulator, with a 10-minute trip during different kinds of weather. Say 10 visitors at a time will board, with video scenery at all portholes and the bow windshields, and experience a rising squall that increases to hurricane proportions, then abates as quickly. The sound of water will hit the boat, while it rolls and pitches very realistically.

Exhibit 2 - Hurricane Season
Specific film of the great hurricanes to strike the Bay, and the prospects of hurricanes can culminate in a 10-minute visit to a small room in a corrugated metal hut under hurricane wind assault, with video pictures of trees and debris flying past windows and the waves crashing on the shore.

Exhibit 3 - The Hydrology of the Bay
While the Cape May Center emphasizes the more than 15,000 natural species of plants and animals of the Bay, this exhibit will tell the story of the hydrology of the Bay and how it affects not only the natural species but man's activities, maritime and otherwise, particularly in regard to potential sea-level rise.

Exhibit 4 - The HMS DeBraak
The culminating exhibit of maritime history will be the story of the HMS DeBraak, sunk in 1798, and recovered in 1986.[12] The remains of the DeBraak now rest in a warehouse in Cape Henlopen State Park, being slowly dewatered. Fifteen years of restoration are estimated to be required to restore the ship to recognizable shape. In the meanwhile some 40,000 artifacts are available for display and interpretation, some of which are now in the Zwaanendael Museum in Lewes. The remains of the DeBraak can be placed in a wing of the Center, and be restored while visitors watch behind glass, both from inside the Center, as well as through windows along the waterfront.

Outdoor Exhibits

Three outdoor exhibit areas are also planned at the Lewes Terminal. A small, 50-seat outdoor amphitheater with the audience looking Northwest, the breakwater along the Harbor of Refuge to the east of the planned second pier, and along the east side of the second pier if and when it is constructed. This can be a location for small visiting vessels, and could have an historic "character" vessel or two anchored there as a permanent exhibit. This vessel could be a U.S. Navy decommissioned ship, a reconstructed DeBraak or other. They are great tourist attractions. With the east side of the pier available, a fantastic opportunity for a maritime museum vessel display exists.

In addition, Cape Henlopen State Park is operated as a nature center and tourist attraction with over 1 million visitors a year across Cape Henlopen Drive.

3.4 Operating the Visitors Centers in Conjunction with Local Facilities

It is the intent of DRBA that the Centers will be operated in close conjunction with local environmental, cultural and historic facilities in Cape May, Lewes and the adjacent areas. For example, any wetlands or marsh exhibits are to be designed to complement those at local facilities to stimulate people to visit the real thing at the Wetlands Institute, the Cape May Nature Center, the Audubon Bird Observatory and the Cape May National Wildlife Refuge. Visitors will see and experience the marshes, their appetites for the trips having been whetted by advertisement at the Center. Similarly at Lewes, the visitor will be urged to experience the richness of the Lewes historic community, the Zwaanendael Museum and Cape Henlopen State Park as part of the total trip.

A particular concern of the Wetlands Institute at Stone Harbor, NJ is that school children who take only one environmental field trip a year, may be diverted to the Cape May Visitors Center. This should be avoided with the Center designed to supplement rather than supplant the excellent work of the Institute.

The Mission and themes of both Centers are expected to increase the overall visitor experience, be they ferry passengers or tourists, through promotion of field trips, lectures, teacher workshops, outreach programs and the like.

3.5 The Centers Sites and Guidelines for Size and Building Programs

The Centers sites and size are guided by a number of principles and economic factors. First, the Centers should be as near the waterfront as possible. People are naturally drawn to water. Although the size, configuration and context of the Lewes Terminal and the Cape May Terminal areas differ, this principle should be applied to both.

Second, the Centers should be of such a size as to accommodate those ferry passengers who have a substantial wait in the staging area, or who have made reservations for a specific ferry and arrive early, before embarking, being able, because of the reservation, to time their visit to the Center. Alternatively, passengers may want to visit the Center on landing, or even park their car, visit the Cape May Center, take the ferry to Lewes, visit the Lewes Center, take the shuttle to Historic Lewes, return by ferry to New Jersey, and make a day of it for dinner at a restaurant in Cape May. Or vice-versa. The combinations are multiple.

Third, the Centers would be too large if sized to accommodate the peak ridership at weekends which ranges from a weekday low of 2,500 to 3,500 at each Terminal, to a weekend high of from 4,500 to 6,000. Peak half-hourly passenger accumulations ranged from a low

of 338 (Cape May to Lewes 6/18/92) to a high of 648 (Lewes to Cape May 8/12/92), with an average of 493.

Fourth, cost of such facilities are a major concern of DRBA. It can assume capital costs to be a function of its total borrowing capacity, but operation and maintenance costs should be borne, if possible, by income. 1993 aquarium/museum construction costs run between $300 and $400/gross square foot, including the kind of experiential exhibits that are needed to make successful attractions. For budgetary purposes, each Center is assumed as a trial size at 30,000 gross square feet (g.s.f.) with a first phase at 20,000 g.s.f. Experience indicates that the aquarium with a central 230,000 gallon shark tank, and similar DeBraak experiences at Lewes will occupy about a half of the second phase 30,000 g.s.f. with public space one-third of that half, or 5,000 s.f. The remaining 15,000 g.s.f. will have about 7,500 g.s.f. of public space, for a total of 12,500 g.s.f. of public space. At a capacity standard of 25 s.f./person, this can accommodate 500 people for each Center without crowding. If the average stay is one hour, with the peak four hours utilized at capacity in the summer months and the off-peak summer visitation at 250 people/hr., the visitation would be 3,000 per day. The three summer months would account for 270,000 people, and the remaining visitors (between 80,000 and 230,000) would be spread over the remaining 9 months of the year, roughly following the curve of passenger ridership.

3.6 Anticipated Visitation

Anticipated visitation to each of the Centers will consist of both ferry passengers who will visit the Centers during their wait for a ferry and visitors from the primary and secondary ferry service area who will be attracted to the Centers as a destination.

A total of 356,467 revenue vehicles and 1,036,311 passengers were carried by the Ferry in 1992. Ridership is generally evenly split between northbound and southbound. It peaks in the summer and on weekends. 67% of total ridership occurs from June through September during which months, vehicles are waiting for the next boat because of the 40-minute ferry headway, the 70-minute trip, the 100-vehicle limit per ferry, and the number of ferries. As a consequence there is a sizeable group of people, intrinsic in ferry operations, who could be attracted to an interesting, attractive, and modestly-priced educational/entertainment facility either while waiting for the ferry or by making special reservations to combine the museum visit and ferry trip as a package. Demand is expected to grow. Revenue passengers increased 6.9 percent in the first seven months of 1993 over the same period in 1992.

Anticipated ferry passenger visitation to the Centers can be estimated utilizing the 1992 passenger ridership and accumulation information described in the Ferry Study.[13] Approximately 500 ferry passengers are at each of the Terminals during the four peak hours in each summer day, and approximately 300 ferry passengers are at each of the Terminals during the four non-peak hours in each summer day. Utilizing a conservative assumption that approxi-

mately 30 percent of the ferry passengers during the peak hours, and 20 percent of the ferry passengers during the non-peak hours would be in the staging area long enough to be attracted to and visit each of the Centers yields the following:

Ferry Passengers Expected to Visit Centers on Typical Summer Day

500 persons/hour x 0.30 = 150 persons/hour x 4 hours = 600 persons
300 persons/hour x 0.20 = 60 persons/hour x 4 hours = 240 persons
Total = 840 persons

Therefore, on a typical summer day, approximately 840 ferry passengers are expected to visit each of the Centers. Over the course of a summer, approximately 75,600 ferry passengers can be expected to visit each of the Centers (840 x 90 = 75,600). In 1992, the three months of June-August accounted for 55 percent of total passenger ridership. Applying this percentage to the 3-month total would suggest an annual visitation to each of the Centers of 137,454 based on ferry passenger attendance alone. This figure does not include attendance by the general public, visitors from the primary or secondary Ferry service area, or on Ferry passenger growth.

For comparison, the Virginia Marine Science Museum, with 40,000 g.s.f. attracted 335,000 visitors in 1992 of whom 39,000 where school children. Admission rates were $4.50 for adults and $3.75 for children (12 and under). The Museum is in the process of expanding to 121,000 g.s.f. Three North Carolina Aquariums (Ft. Fisher - 33,000 s.f., Pine Knoll Shores - 34,000 s.f., Roanoke Island - 35,000 s.f.) attracted over 1,900,000 visitors in 1992. No admission is currently charged, but admission is expected to be charged, beginning in 1994.

Tourism and vacation-related travel plays a critical role in the primary service area of the Ferry, and in terms of the existing and future Ferry vehicle and passenger ridership. A study conducted in 1989 to evaluate the economic impact of tourism at the Jersey Shore found that a total of $7.4 billion was spent during the 1989 summer season by a total of 5.7 million visitors[14]. Of this total of visitors, 4.1 million (or 70%) listed their destination as being within the Cape May-Lewes Ferry primary service area communities of Ocean, Atlantic, and Cape May Counties. A representative of the New Jersey Division of Tourism recently stated that sales revenue this summer is up 7% over the summer of 1992. Other data are not available for Kent and Sussex Counties in Delaware.

Based on the experience at Virginia's and North Carolina's aquariums/museums, and based on the tourist population available in the Ferry's primary service area alone, the assumption that 232,546 additional tourists can be attracted to a high quality facility seems conservative.

Therefore, total visitation at each Center is estimated to be a minimum of 370,000 and a high ranging more than 500,000, assuming the second phase is constructed.

3.7 The Centers and The Master Plans

At the Lewes Terminal, the ultimate addition of a second ferry pier will require the relocation of the present Restaurant/Gift Shop to another site. It is currently inadequate in size and does not lend itself to addition. For these reasons, a new restaurant and gift shop are planned in conjunction with the Lewes Terminal Visitors Center. The current restaurant has only 98 seats. A 200-seat cafeteria-style restaurant is programmed to occupy about 5,000 g.s.f. including kitchen and storage to which should be added 1,000 g.s.f. for a gift shop. The total building program at Lewes will thus be 36,000 g.s.f. However, in the short-term until the new pier is necessary, the current restaurant will be remodelled by adding 102 seats, 30 of which will be in a 2nd level "Pilot House" restaurant.

At the Cape May Terminal, the current Visitor Building is scheduled to be renovated as the Headquarters for the whole Ferry operation to replace the inadequate temporary structures now in place. As a consequence, a scenario similar to Lewes will be followed by combining a 1,000 g.s.f. gift shop plus 1,000 g.s.f. welcome area and 200-seat restaurant (to replace the current 200-seat cafeteria and gift shop) on the same site as the 20,000 g.s.f. Cape May Terminal Visitors Center for a total here of 28,000 g.s.f. of building.

At both Centers a Security Office will provide for lost children, ferry announcements, and other security measures.

3.8 Preliminary Cost Estimates

Costs are estimated at this time for the proposed Centers, Restaurants and Gift Shops to get an order-of-magnitude figure. The estimates are based on unit costs and typical fee structures from WRT's files and research on similar aquariums and museums, and do not include site development and landscaping costs which are Terminal-specific. These will be estimated as part of overall costs.

It is assumed that each Center's building will be of comparable complexity and quality as follows: 5,000 g.s.f. will be equivalent to aquarium costs[15]; 15,000 g.s.f. will not require the life support systems of an aquarium but will include quality exhibitry; the 8,000 g.s.f. of restaurant and gift shop will be of good quality but not unusually expensive shells and fit-out. Costs are as follows:

Estimated Cost of Cape May Visitors Center and Restaurant

5,000 g.s.f. @ $300/g.s.f.	= $ 1,500,000
15,000 g.s.f. @ $200/g.s.f.	= $ 3,000,000
8,000 g.s.f. @ $100/g.s.f.	= $ 800,000
Total Hard Costs and Exhibits	= $ 5,300,000

Fees (Architects, Engineers, Life Support Engineer, Exhibit Designers, Graphics, Signage) @ average 11% $ 583,000

Total Cost $ 5,883,000

This is an average cost of $210.11/g.s.f. for 28,000 g.s.f.

Estimated Cost of Lewes Visitors Center and Restaurant Renovation/Expansion

Renovation of Terminal Building
6,000 g.s.f. @ $50/g.s.f. $ 300,000
Restaurant Expansion
2,000 g.s.f. @ $100/g.s.f. $ 200,000
Maritime Exhibit & Related
5,000 g.s.f. @ $300/g.s.f. $ 1,500,000
Auditorium & Other Exhibit
15,000 g.s.f. @ $200/g.s.f. $ 3,000,000
Total Hard Costs and Exhibits $ 5,000,000
Related Project Fees, @ average 11% $ 550,000

Total Cost $ 5,550,000

This is an average cost of $198.21/g.s.f. for 28,000 g.s.f.

TOTAL Visitors Center Costs $11,433,000

The concept layout for each Center allows for phasing, by building 20,000± g.s.f. and adding later. The alternative, building a less expensive facility, say at an average of $150/g.s.f., is possible, but would not allow for "state-of-the-art" exhibitry and would quite possibly be more labor-intensive in operation.

3.9 Center Operating Costs and Exhibit Replacement Reserve

WRT has assembled operating cost data from various aquariums. The most comparable facility is the Virginia Marine Science Museum. Their 1992 operating expenses were $1.3 million (excluding building and ground maintenance, paid for by The City of Virginia Beach) and revenues were $1.4 million on attendance of 335,000 visitors. Building operating costs were $3.88 per visitor. However, this number also includes operating and staffing costs for their concessions and gift shop. The operating budget for the museum alone is $1 million.

Operating and Maintenance budgets for 1992 at the three North Carolina aquariums are: Fort Fisher -- $550,000 (attendance 600,000); Pine Knoll Shores -- $703,000 (1993-1994) (attendance 559,000); Roanoke Island -- $600,000 (attendance 590,000). Once again, the

North Carolina Museums are the best examples because they most closely resemble what DRBA is trying to achieve at the Ferry Terminals.

It would be misleading to try to estimate the operating and maintenance costs for the two proposed Centers at this point. However, if a presumed operating and maintenance budget of $1,500,000 were divided by 370,000 visitors, the result is $4.05/person. This figure should not be construed as a guide. Only as detailed design in Stage Three takes place can accurate figures be generated.

Finally, the "shelf life" of exhibits varies, and a replacement reserve must be set aside to update or replace exhibits.

3.10 Economic Feasibility and Impact

The Virginia Marine Science Museum's entrance fees cover operating and maintenance costs for the building. The City of Virginia City takes care of the grounds. Adults are charged $4.25, children (12 and under) $3.50, and Senior Citizens $3.85. Group rates are available for school children, etc.

If adult tickets were priced between $5.00 and $6.00, with other rates commensurate, the two Centers would be economically feasible as "stand-alone" profit centers.

The Virginia Marine Science Museum "Economic Impact Study" by Economic Research Associates indicates a projected economic gain for the City from visitor expenditures of $32,320,750 with a projected yearly attendance at 782,000 people, or $41.33 per attendee.

3.11 The Centers and the Terminal Master Plans - Next Steps

Elements of the Master Plan are already in implementation: testing the supplying of the oil to the ferries by tankers prior to committing to the replacement of the Fuel Storage Tank, replacement of deteriorated fendering with the new fendering system installed on a piece-meal basis, etc.

The cost of implementing the Master Plan will be calculated and phasing and scheduling detailed before any major steps can be taken. The new restaurant at the Cape May Terminal must be constructed before the present restaurant and Terminal Building is vacated and the building remodelled as the new Administration and Police Building.

Immediate next steps are for DRBA's Commissioners to give approval for the widespread involvement of many governmental, university, and private parties interested in the Centers.

Upon successful conclusion, the DRBA will issue Requests for Proposals from pre-qualified architects, life-support system engineers, exhibit designers and "imagineers" to prepare designs, construction documents, bid, and construct the Interpretive Centers, all while uninterrupted ferry service continues.

Notes

[1] Bryant, Tracey L., et. al.: "The Delaware Estuary: Rediscovering A Forgotten Resource", University of Delaware Sea Grant College Program, 1988, p. 33.

[2] In 1985, Congress directed EPA to conduct four estuary programs. Since then the National Estuary Program has expanded to include 21 estuaries. The Delaware Inland Bays were designated in 1981, and the Delaware Estuary in 1989. The Delaware Estuary Program (DELEP) recently expanded the Program to include the entire watershed below the Falls at Trenton. This encompasses approximately 6,000 square miles of drainage area, or 47% of the Delaware River Basin's 12,765 square miles.

[3] "Ferry Study: Existing Characteristics of Ferry Operation and Current and Future Ridership Report #1," July 23, 1993, Wallace Roberts & Todd with S. T. Hudson Engineers, Inc.

[4] "Cape May-Lewes Ferry Survey, Final Report" for the DRBA, by Morris Davis and Company, October 1, 1993.

[5] Davis, Morris and Company, Op. Cit.

[6] DRBA News Release, October 28, 1993.

[7] Bryant, Tracey L., et. al., Op. Cit.

[8] Delaware Estuary News, Vol. 3, Issue 4, p. 8.

[9] These are rented tapes and headsets, or a more sophisticated headset-only whose audio is set off by proximity to specific exhibits as in the Louvre, Paris.

[10] Thomas, George, et. al. "Cape May: Queen of the Seaside Resorts. Its History and Architecture," Philadelphia, The Art Alliance Press, 1976.

[11] "The Economics of Birding at Cape May, New Jersey" by Paul Kirlinger and David Wiedner, in Ecotourism and Resource Preservation, 1st International Symposium: Ecotourism, Merida Mexico, 1989.

[12] Gentile, Gary, "Shipwrecks of Delaware and Maryland," Gary Gentile Productions, Philadelphia, PA, 1990, pp. 54-73.

[13] WRT, Op. Cit.

[14] Opinion Research Corporation, 1989.

[15] WRT has a complete breakdown of the New Jersey State Aquarium in Camden completed in 1991. The Liberty State Park Science Center in Jersey City, NJ shell hard costs ran $200/g.s.f.

2.0 Master Plan Implementation

2.1 Capital Cost Analysis

Capital costs were evaluated for all recommended components of the Master Plan. These costs have been broken down into three major classifications. The first category includes all capital improvements related to the Ferry operation. These include: the removal of the existing oil tank at Cape May and the development of a new day storage tank system, the installation of double loading ramps at both the Cape May and Lewes Terminals, the modifications to the five ferries required for double ramping, the addition of bow thrusters on each ferry to improve maneuverability and the refurbishment of the interior areas of the ferries.

Table 1: Master Plan Capital Costs

	ITEM	Units	Unit Costs	Quantity	Total Cost
1.	**Recommended Improvements Related to Ferry Operations**				
	a. Remove Existing Tank	Each	$162,000	1	$162,000
	b. Install New Day Storage Oil Tank	Each	N/A	2	$1,020,000
	c. Revise Existing Ramping Systems for Two Lane Loading	Each	$570,000	4	$2,280,000
	d. Modify Existing Vessels for Double Ramping	Each	$50,000	5	$250,000
	e. Pile Replacement for Piers		N/A		$10,500,000
	e. Add Bow Thrusters to Existing Vessels	Each	$200,000	5	$1,000,000
	Sub-Total - Ferry Operations				**$15,212,000**
2.	**Cape May Terminal Recommended Master Plan Improvements**				
	a. Demolition of Existing Maintenance and Administration Bldgs.	$/SF	$20	20,000	$400,000
	b. New Maintenance Building	$/SF	$50	30,000	$1,500,000
	c. Public Terminal Bldg. Conversion to Administrative Functions	$/SF	$60	17,000	$1,020,000
	Sub-Total				**$2,920,000**
	d. Cape May Visitors Center				
	• Visitor Center, Restaurant and Gift Shop	$/SF	$100	8,000	$800,000
	• Aquarium Exhibit Space	$/SF	$300	5,000	$1,500,000
	• Other Exhibit Space	$/SF	$200	11,800	$2,360,000
	• Auditorium	$/SF	$200	3,200	$640,000
	• Related Project Fees (11%)	*			$583,000
	Sub-Total - Visitors Center				**$5,883,000**
	e. Visitors Center Related Site Work				
	• Waterfront Edge Stabilization and Boardwalk Promenade	$/LF	$800	900	$720,000
		$/SF	$50	14,400	
	• Upper Level Promenade (Brick/Concrete Unit Pavers)	$/LF	$400	1,100	$440,000
		$/SF	$16	27,500	
	• Visitor Parking	$/Space	$1,800	280	$504,000
		$/SF	$6	84,000	
	• Access Roads	$/LF	$250	1,600	$400,000
		$/SF	$8	48,000	
	• Natural Area Enhancement and Pond Creation	$/Acre	$150,000	12	$1,800,000
	• Other Landscape Elements	*			$500,000
	• Related Project Fees (7.5%)				$327,300
	Sub-Total - Visitors Center Related Sitework				**$4,691,300**
	Sub-Total - Cape May Terminal				***$13,494,300***

Table 1: (contd.)

ITEM	Units	Unit Costs	Quantity	Total Cost
3. Lewes Terminal Recommended Master Plan Improvements				
a. Lewes Visitors Center				
• Public Terminal Building Dining Area Expansion	$/SF	$100	1,000	$100,000
• Public Terminal Building Renovations For Visitor Functions	$/SF	$50	6,000	$300,000
• Public Terminal Building Expansion	$/SF	$100	2,000	$200,000
• The DeBraak Exhibit and/or Other Systems Intensive Exhibits	$/SF	$300	5,000	$1,500,000
• Other Exhibit Space	$/SF	$200	11,800	$2,360,000
• Auditorium	$/SF	$200	3,200	$640,000
• Related Project Fees (11%)				$561,000
Sub-Total Lewes Visitors Center				**$5,661,000**
b. Project Related Site Work				
• Recreational Pier Development	$/LF	$600	200	$120,000
• Promenade Development (Brick/Concrete Unit Pavers)	$/LF	$600	600	$360,000
	$/SF	$16	22,500	
• Visitor Parking Lot Renovation	$/Space	$1,000	328	$328,000
	$/SF	$3.30	98,400	
• Visitors Center Entrance Drive	$/LF	$475	420	$199,500
• Cape Henlopen Drive Signalization & Road Improvements	LS			$1,500,000
• Other Landscape Elements, Park Gateway Creation	LS			$500,000
• Cape Henlopen State Park Parking/Ferry Overflow Parking	$/Space	$1,800	94	$169,000
• Related Project Fees (7.5%)				$238,200
Subtotal - Project Related Work				**$3,414,700**
Sub-Total - Lewes Terminal				***$9,075,700***
Total Capital Cost for Ferry Operations and Landside Improvements				***$37,782,000***

The second classification includes all other landside improvements at the Cape May Ferry Terminal. These include new buildings, roads, parking and stacking expansion, open space and pedestrian walkway improvements. The third classification includes all landside improvements at the Lewes Ferry Terminal.

The above cost summary chart provides unit cost, anticipated number of units and a total cost for each major capital project and related project fees. The preliminary total capital cost for all projects in 1994 dollars is $37,782,000, exclusive of two new piers or new vessels.

Visitors Center Operating Costs and Exhibit Replacement Reserve

WRT has assembled operating cost data from various aquariums. The most comparable facility is the Virginia Marine Science Museum. Its 1992 operating expenses were $1.3 million (excluding building and ground maintenance, paid for by The City of Virginia Beach) and revenues were $1.4 million on attendance of 335,000 visitors. Building operating costs were $3.88 per visitor.

Operating and Maintenance budgets for 1992 at three North Carolina nature centers/ aquariums along the Outer Banks are: Fort Fisher -- $550,000 (attendance 600,000); Pine Knoll Shores -- $703,000 (1993-1994) (attendance 559,000); Roanoke Island -- $600,000 (attendance 590,000). Operational characteristics and design features were also investigated by DRBA staff.

It is not possible to estimate the operating and maintenance costs for the two proposed Visitors Centers at this point. However, if a presumed operating and maintenance budget of $1,500,000 were divided by 370,000 visitors, the result is $4.05/person. This figure should not be construed as a guide. Only as detailed design takes place can accurate figures be generated. Finally, the "shelf life" of exhibits varies, and a replacement reserve must be set aside to update or replace exhibits.

2.2 Project Phasing

Elements of the Master Plan are already in implementation: testing the supplying of the oil to the ferries by tanker truck prior to committing to the replacement of the oil storage tank, replacement of deteriorated fendering with the new fendering system installed on a piecemeal basis, installation of in-shore dolphin units, Cape May Maintenance Warehouse building, Lewes Terminal dining area expansion, and Lewes administration facilities expansion.

The phasing is broken down into three areas: Ferry operations improvements, improvements to the Cape May Terminal and improvements to the Lewes Terminal. With Ferry operations, the lead actions will be the refurbishment of one of the vessels (featuring new interior areas), the installation of bow thrusters and the modification of the vessels for double ramping. This work is taking place during the first part of 1994. Another lead action will be the installation of new day storage tanks and new piping at the Cape May Terminal. This will permit the removal of the existing 2.3 million gallon tank. Another recommended action which will follow will be the installation of new double-lane transfer bridges. This work should commence in the fall of 1994 and should be completed before the beginning of the 1995 summer season. It is anticipated that both the ramps at the Cape May and Lewes Terminals will be completed during the same construction period.

At the Cape May Terminal, the lead action not related directly to Ferry operations will be the development of a new Maintenance Building and the demolition of the existing Maintenance Building (the development of the fuel oil day storage tanks and the removal of the existing 2.3 million gallon tank was included in Ferry operations improvements). The removal of the existing oil tank will permit the development of a new restaurant, gift shop, first phase Visitors Center, and outdoor exhibits on that site adjacent to the Cape May Canal. This action in turn permits the reuse of the existing Passenger Terminal Building for administrative offices. Once this conversion takes place, the existing Administration Building can be demolished.

At the Lewes Terminal, the lead action is the expansion of the Public Terminal Building's dining area to double the seating capacity. This project should also include the refurbishment of the existing dining and serving areas. Next the improvements program for the Ferry exit and entrance lanes and the signalization of Cape Henlopen Drive. Road modifications will also be required on Cape Henlopen Drive. This project would be followed by the expansion of the Public Terminal Building and the addition of additional

Project Phasing

Cape May Terminal Recommended Master Plan Improvements

	Phase	Total Cost
	Phase IA	
a	Remove Existing Tank	$162,000
b	Install New Day Storage Oil Tank	NA
		$162,000
	Phase IB	
a	Demolition of Existing Maintenance Building	$200,000
b	New Maintenance Building	$1,500,000
		$1,700,000
	Phase IC	
a	Revise Existing Ramping Systems for Two Lane Loading	**$1,140,000**
	Phase IIA	
a	Visitor Center, Restaurant and Gift Shop	$800,000
b	Related Project Fees for the Visitor Center (8 9+%)	$74,500
c	Waterfront Edge Stabilization and Boardwalk Promenade	$720,000
d	Upper Level Promenade (Brick/Concrete Unit Pavers)	$440,000
e	Visitor Parking	$504,000
f	Access Roads	$400,000
g	Natural Area Enhancement	$600,000
h	Other Landscape Elements	$250,000
i	Related Project Fees For Site Work (7.5%)	$218,500
		$4,007,000
	Phase IIB	
a	Cape May Visitors Center:	
	. Aquarium Exhibit Space	$1,500,000
	. Other Exhibit Space	$2,360,000
	. Auditorium	$640,000
	. Related Project Fees (11.3%)	$508,500
b	Natural Area Enhancement	$1,200,000
c	Other Landscape Elements	$250,000
d	Related Project Fees For Site Work (7.5%)	$109,000
		$6,567,500
	Phase IV	
a	Public Terminal Building Conversion to Adminstrative Functions	$1,020,000
b	Demolition of Existing Administration Building	$200,000
		$1,220,000
	Total Cost of All Phases - Cape May Terminal	**$14,796,500**

Visitors Center functions. This phase of work would be followed by the renovation of the Visitors Center parking lot and the development of a new entrance drive.

The cost of implementing the Master Plan will be further refined and phasing and scheduling detailed before any major steps are taken. The new restaurant at the Cape May Terminal

Project Phasing (contd.)

Lewes Terminal Recommended Master Plan Improvements

	Phase	Total Cost
	Phase IA	
a	Public Terminal Building Dining Area Expansion	**$100,000**
	Phase IB	
a	Revise Existing Ramping Systems for Two Lane Loading	$1,140,000
b	Provide Three Exit Lanes, Alter Employee Parking Lot and Signalize Cape Henlopen Drive	$600,000
c	Provide Road Improvements on Cape Henlopen Drive West to Freeman Highway	$300,000
		$2,040,000
	Phase IIA	
a	Public Terminal Building Renovations for Visitor Functions	$300,000
b	Public Terminal Building Expansion	$200,000
c	Related Project Fees for the Public Terminal Building (8%)	$40,000
c	Waterfront Promenade Renovation (Brick/concrete Unit Pavers)	$180,000
		$720,000
	Phase IIB	
a	Lewes Visitors Center	
	. The DeBraak Exibit and Other Systems Intensive Exhibits	$1,500,000
	. Other Exhibit Space	$2,360,000
	. Auditorium	$640,000
	. Related Project Fees (11.3%)	$510,000
b	Promenade Expansion (Brick/Concrete Unit Pavers)	$180,000
c	Recreational Pier	$120,000
		$5,310,000
	Phase III	
a	Visitor Parking Lot Renovation	$328,000
b	Visitors Center Entrance Drive	$199,500
c	Cape Henlopen Drive Improvements East of the Toll Plaza	$600,000
d	Other Landscape Elements, Park Gateway Creation	$500,000
e	Cape Henlopen State Park Parking/Ferry Overflow Parking	$169,000
f	Related Project Fees for Site Work (7.5%) - (includes site design fees for all phases)	$216,500
		$2,013,000
	Total Cost of All Phases - Lewes Terminal	**$10,183,000**
	Total Cost of All Phases - Lewes and Cape May Terminals	**$24,979,500**
	Total Cost of Ferry Modifications	**$1,250,000**
	Total Cost of All Master Plan Projects	**$26,229,500**

must be constructed before the present restaurant and Passenger Terminal Building is vacated and the building remodelled as the new Administration and Police Building.

Phasing maps follow to illustrate the overall sequence of implementation.